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FIRST HALF OF 1918—No. 1

SIXTY-THIRD YEAR

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NEW YORK—JANUARY 4, 1918—CHICAGO

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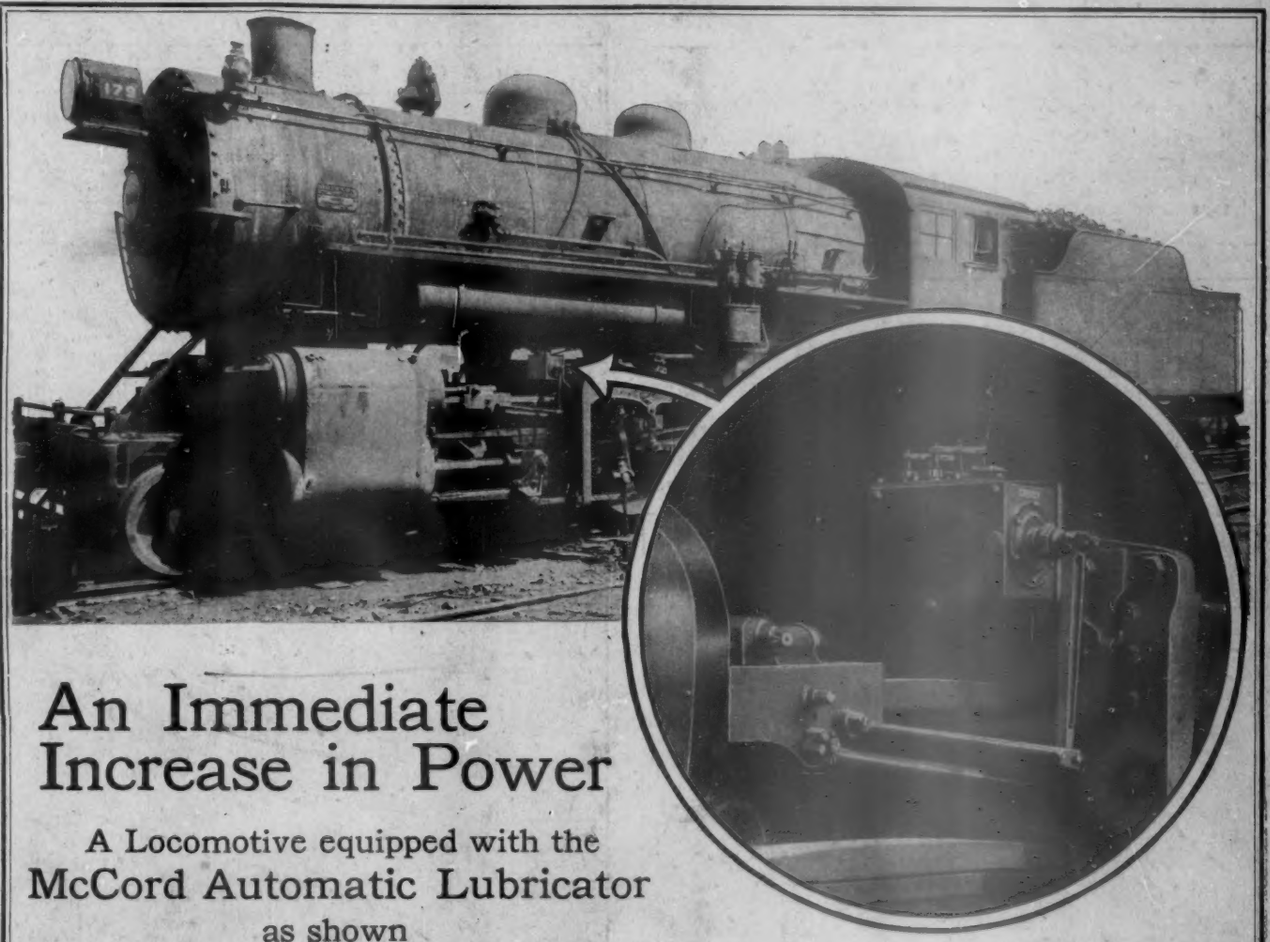

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Quality standards are fixed and dependable

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Gold's Thermostatic Control System Saves 50% in Steam Consumption, Uses Less Pipe and Fittings—Positively Gives a Uniform Temperature.

Thermostatic Control Can Be Applied to Your Existing Systems

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Sole Manufacturers

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For Monitor and Arch Roof Cars, and all classes of buildings; also

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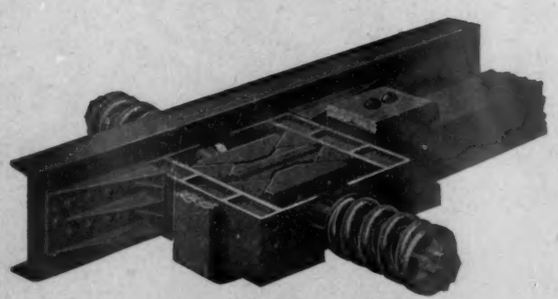
Triples Capacity reduces recoil 25% (for old or new cars)

Universal Draft Gear Attachment Co.

Railway Exchange Building CHICAGO

Cardwell Friction Draft Gear



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Chicago . . . Illinois

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SAFETY

Comfort, Safety and Satisfaction for the traveling public are assured by

Edwards Fixtures

The No. 13 Sash Lock illustrated above, permits the window sash to be raised or lowered easily, or if so desired—regulated to any height—at which point it will remain with no danger of falling due to shock, jar or vibration.

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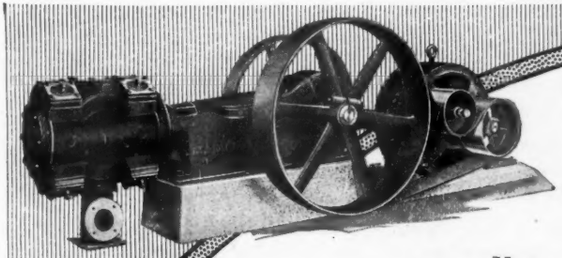
The O. M. Edwards Co., Inc.

Window Fixtures
All Metal Sash Balances
Metal Stop Casings

SYRACUSE, N. Y.

Metal Extension Platform
Trap Doors
Top, Bottom and Side Weather Stripping



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In selecting this type you assure yourself of a dependable supply of air at low cost.

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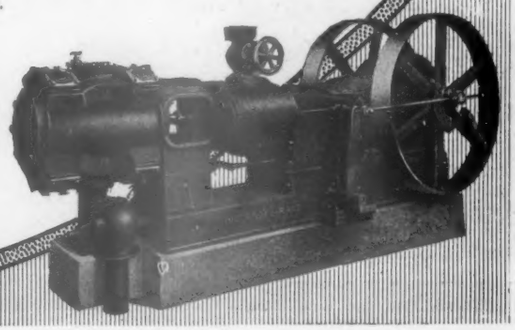
Ask for "Ingersoll-Rogler" Folder No. 869.

It describes both the power driven Class "ER" and the Steam driven Class "FR."



INGERSOLL-RAND COMPANY

11 Broadway, New York 165 Q. Victoria St., London

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245-C

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UNITED STATES FIDELITY & GUARANTY COMPANY
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Why we guaranteed these roofs for twenty years—

THE car-shops of the Duluth & Iron Range Railroad at Two Harbors, Minn., illustrated below, carry a Barrett Specification Roof which is guaranteed by a Surety Bond for twenty years.

We know, from an experience of over fifty years, that Barrett Specification Roofs will greatly outlast the guaranteed period, and therefore do not hesitate to give this Surety Bond.

No other roofing is guaranteed in this way because no other manufacturer, evidently, cares to take the risk of having to repair and replace his roofs if they fail.

The reasons for their long life are:

First,

because they are constructed of Barrett Specification Pitch and Felt, the greatest waterproofing materials known.

Second,

because a greater amount of this waterproofing is used in Barrett Specification Roofs than in any other kind of roof-covering, and the amount of waterproofing material in the roof largely determines its life.

Third,

because under the 20-Year Guaranty Plan the roof must be constructed *under the supervision of our inspectors,* and we know, therefore, it will be constructed right.

That is why these roofs last twenty years and more; that is why we can afford to give a Surety Bond Guaranty with every one.

The 20-Year Guaranty Bond

The 20-Year Guaranty is now given on all Barrett Specification Roofs of fifty squares and over in all towns in the United States and Canada with a population of 25,000 and over, and in *smaller places where our Inspection Service is available.*

Our only requirements are that The Barrett Specification dated May 1, 1916, shall be strictly followed and that the roofing contractor shall be approved by us.

Copy of The Barrett 20-Year Specification and further information promptly furnished upon request.

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Cleveland Cincinnati Pittsburgh Detroit Birmingham
Kansas City Minneapolis Nashville Salt Lake City
Seattle Peoria

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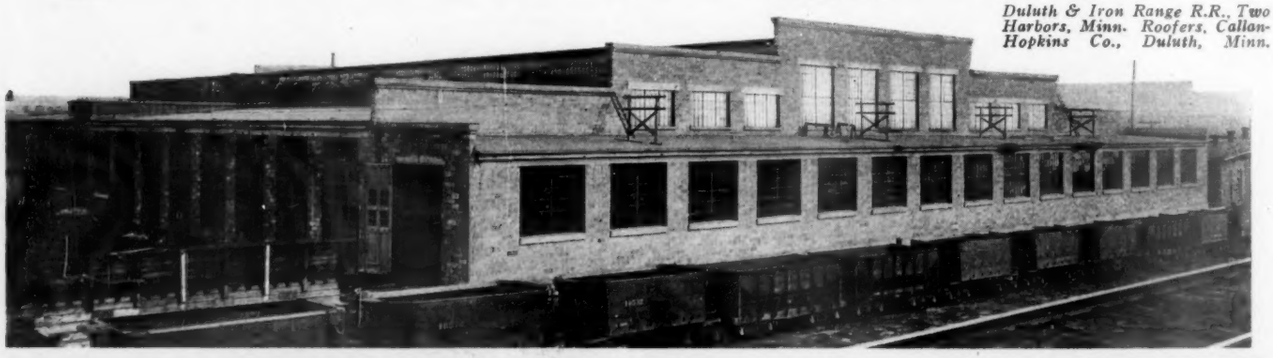
Duluth & Iron Range R.R., Two Harbors, Minn. Roofers, Callan-Hopkins Co., Duluth, Minn.



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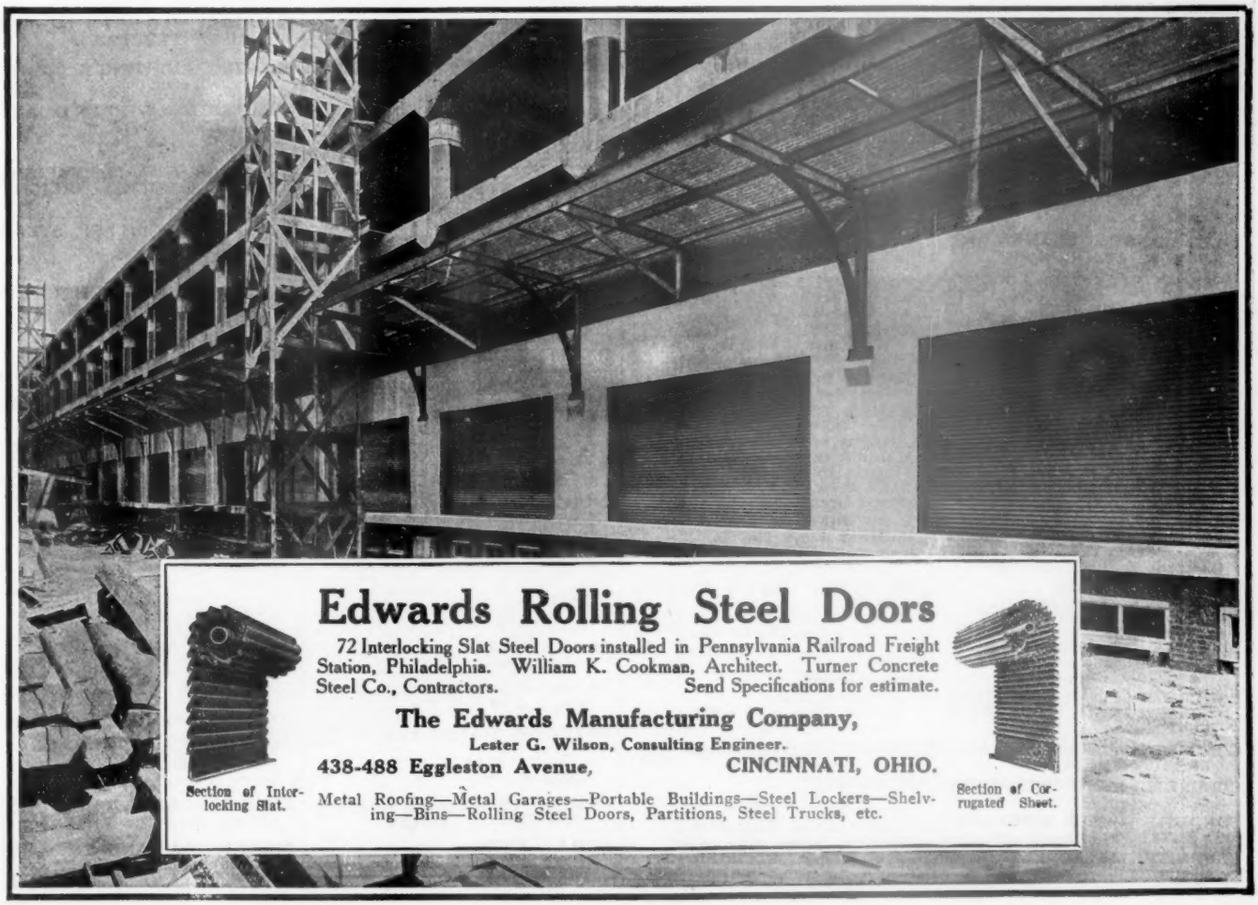

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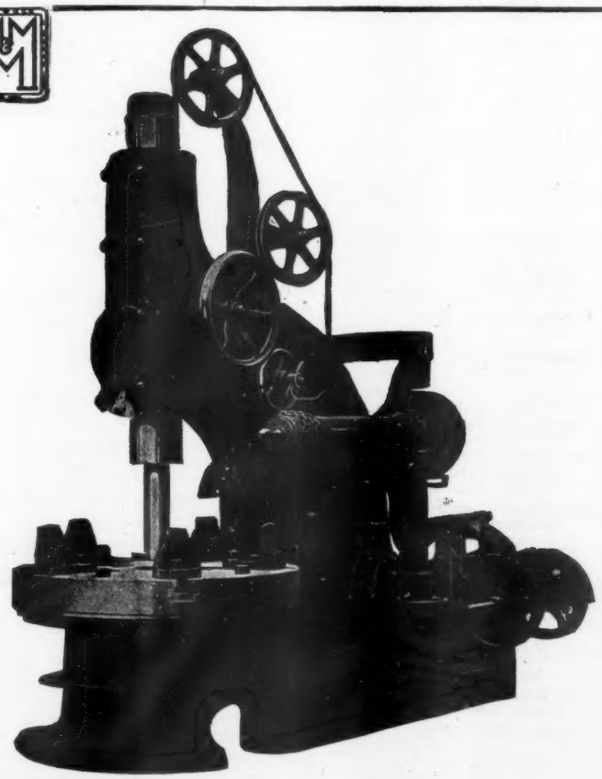

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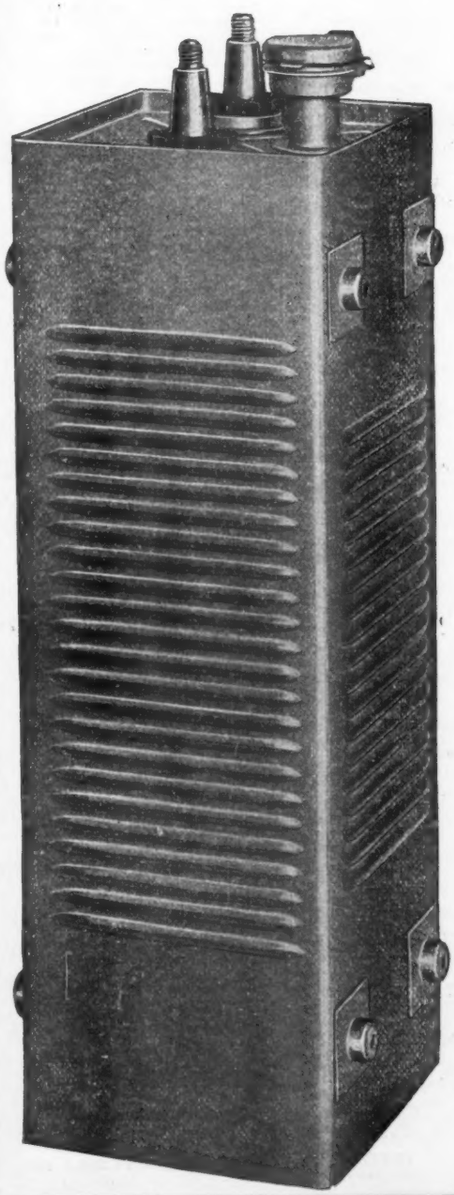

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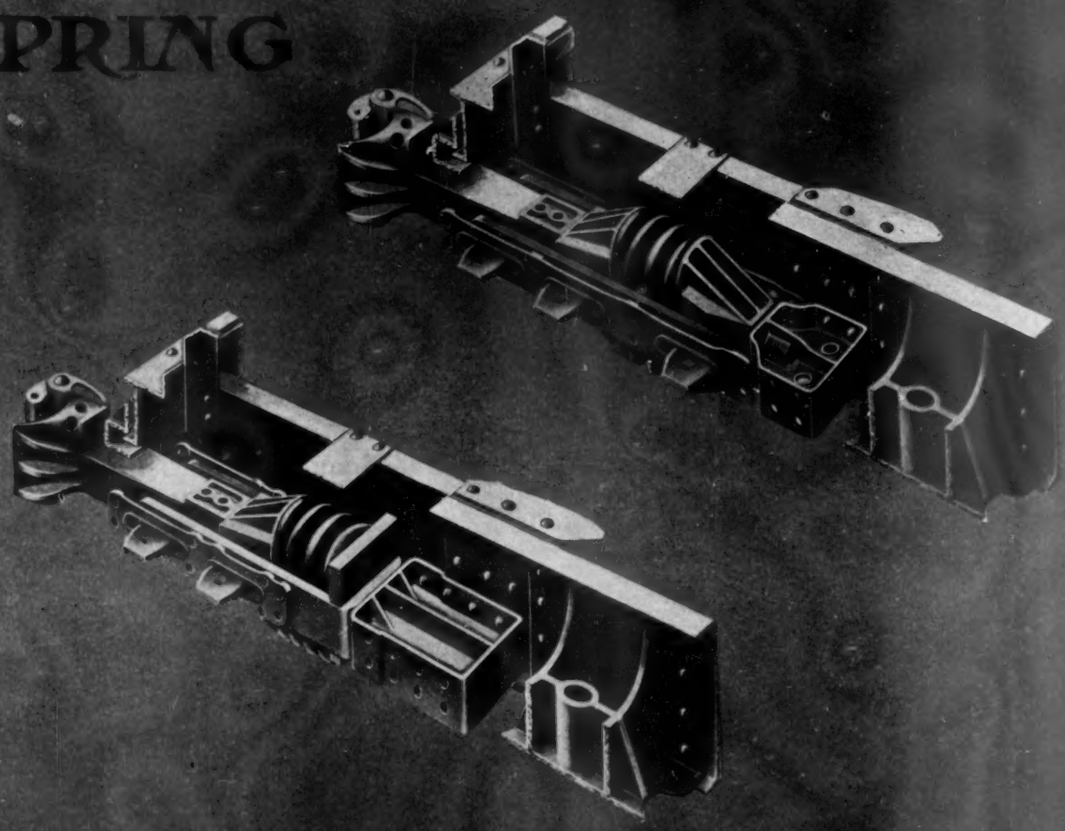

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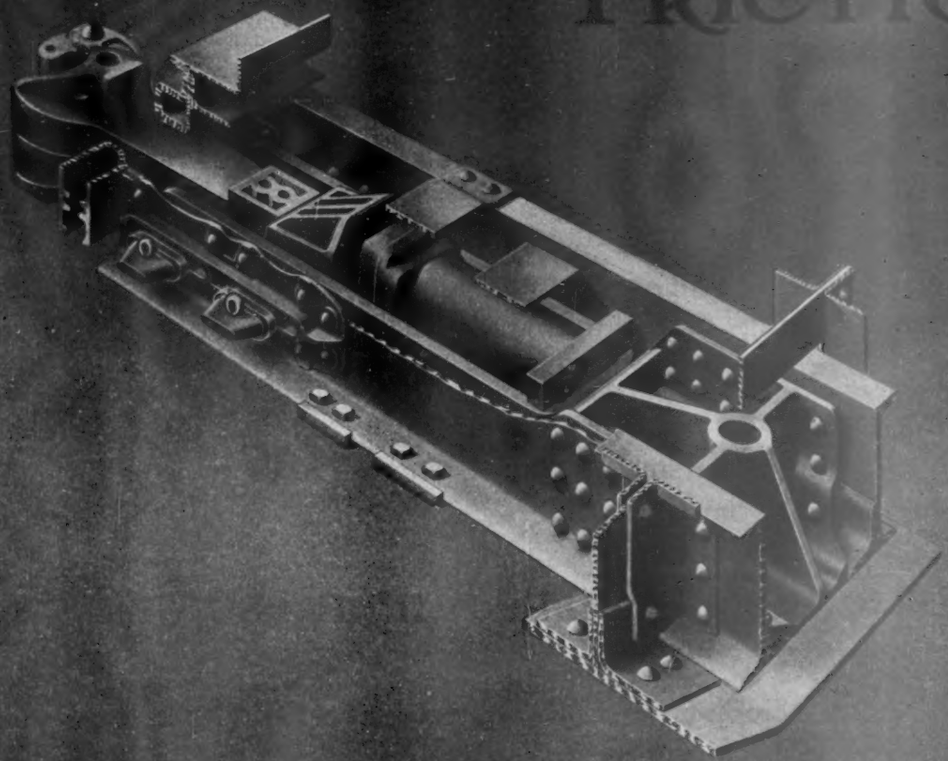

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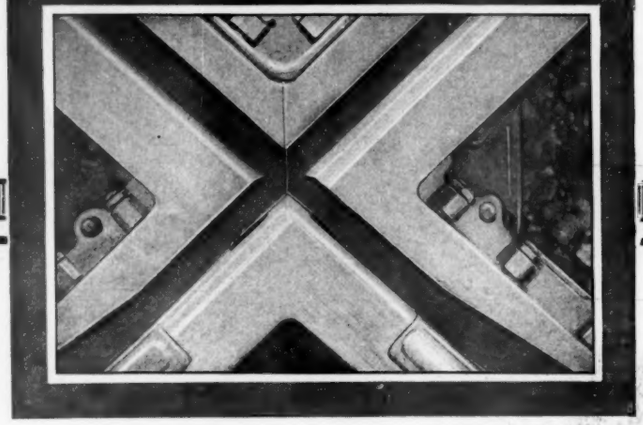
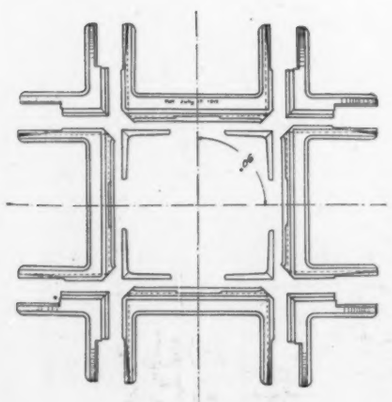


An Improved Manganese Crossing

MAINTENANCE OF WAY men know that crossings of manganese steel wear from three to ten times as long as crossings fabricated from the ordinary rolled rail, and that solid cast crossings are seldom replaced because of being worn out, but usually *because of being broken at flangeway intersections.*

A happy medium between these two types is produced by combining the wonderful resistance to wear of cast manganese steel, with only enough flexibility to allow slight weaving without breaking at the flangeway intersections, in the

Balkwill Articulated Cast Manganese Crossing



DETAILS OF A BALKWILL CROSSING

It is made up of units, scientifically designed to prevent breakage at flangeway intersections, the joints being placed where cracks formerly occurred, due to the reversal of stresses resulting from passing wheels.

The construction of the Balkwill articulated cast manganese crossing is shown in detail at the left. The service it has given on over fifteen roads speaks for its efficiency.

If your crossing maker has not taken out a license to manufacture these crossings, do not allow him to substitute any other. Write us direct for blue prints and detailed information.

The Balkwill Manganese Crossing Co.,

506 Williamson Bldg.
Cleveland, Ohio

Facts Are Guide-Posts

What we think, matters little. Facts will assert themselves and must be recognized.

To men of prudence, facts are guide-posts to future action. Many railroad officials have read the Interstate Commerce Commission's Annual Report (reviewed in the December 7 *Railway Age Gazette*), stating facts disclosed through investigation of 80 train accidents. In regard to collisions occurring on lines operated under automatic block signals, it says:

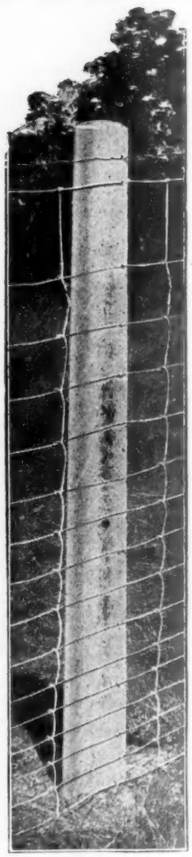
> "Of the 11 collisions investigated which occurred in automatic block signal territory, 8 were due to failure of enginemen to obey signal indications. This comparatively large number of accidents of that character emphasizes the necessity for the development and use of some form of automatic train control device to supplement existing block signal apparatus."

This means taking the human element of fallibility out of train operation, and substituting mechanical accuracy to enforce obedience to signal indications.

The one great fundamental object of the Miller Train Control is to enforce obedience to track conditions without interfering with or assuming any of the responsibility of the engineer.

Miller Train Control Staunton, Va. Danville, Ill.

Fencing With Concrete Posts Now Will Save Money Later



Many railroads are paying annually an unnecessary premium on the upkeep and renewals of their fencing because they are using wooden posts. The premium they pay equals the difference between the lasting qualities of wood and reinforced concrete. The first cost of each is approximately the same though this fact is not generally known.

These homely facts show the money-saving which automatically accrues through using "National" concrete posts:

Fires cannot burn them, though weeds and leaves are heaped along the fence.
Concrete never rots. Instead, it grows stronger with age.
Water cannot lift concrete posts out of the ground during floods.
Frost does not heave them nor break them.
They cannot rust as do iron or steel posts, nor do they corrode.
Concrete posts are uniform in size, therefore no holes require redigging.
"National" posts are tapered, requiring less tamping when set, and having the weight properly distributed.

Best of all, every railroad has sand, gravel and stone for making concrete posts at various points along its lines for easy distribution. The source of supply of concrete posts is unlimited, and always available.

One road has been building fences with "National" concrete posts for over nine years with great satisfaction. Several other roads are now using them. Names will be sent on request, with full information.

"A Post is Known by the Fences It Keeps"

National Concrete Machinery Company

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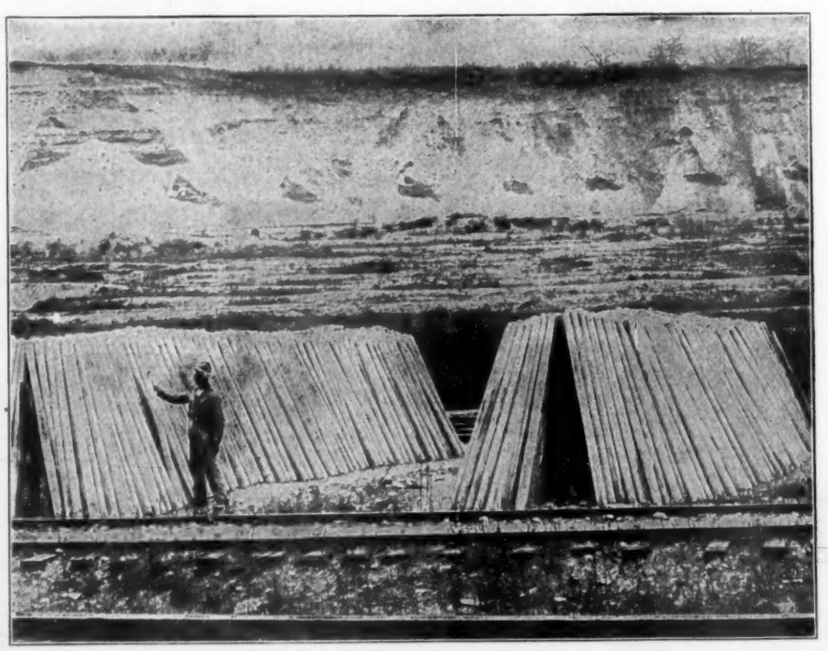
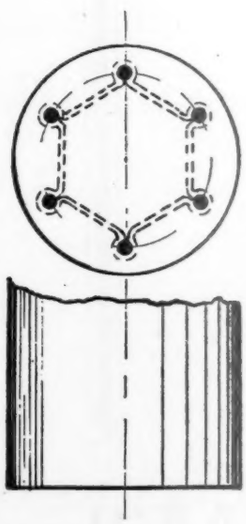
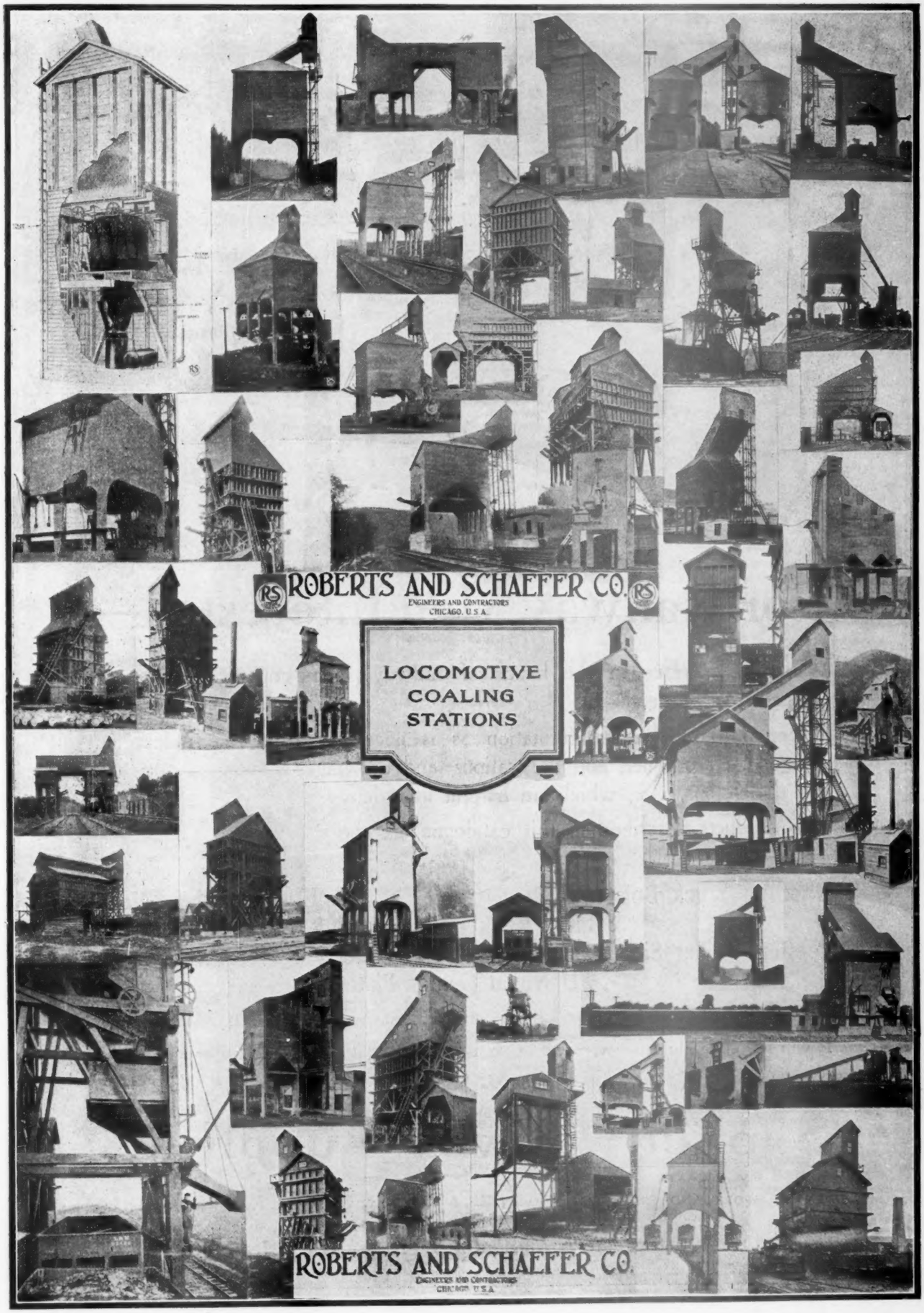




LOCATION OF REINFORCEMENTS IN FINISHED POSTS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It contains only such information as is necessary to give a clear cut idea of each product, and illustrations and drawings showing construction and dimensions, etc., which are helpful in ordering.

The products described in this catalogue are the

Huntoon Truck Bolster **Huntoon Brake Beam**
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It will be mailed to those who will make a request for it. To what address shall we send it?

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a Truscon Steel Building
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Truscon Steel Buildings come to you in steel panels, all ready to erect—made of interchangeable steel units, assembled by means of a simple locking device.

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A comprehensive organization is the basis for Oxweld service. Men, materials and products are organized ready for serving railroads.

The different lines of work are apportioned to departments in charge of specialists. The Mechanical Department, comprising nine districts in the United States under competent superintendents, confines its efforts to railway shops. The Track Department, which is rapidly expanding, is engaged only with maintenance of way problems. Experienced engineers in the Installation Department are occupied in erecting generating plants wherever increasing demands for service require, while inspectors put equipment in operating condition on the field, or send it in to the Repair Department. Special representatives, and an efficient Business Department complete the organization. The efforts of all departments are concentrated on supplying Oxweld service to railroads.

Back of this organization are adequate resources of materials, and supplies that can be "mobilized" readily according to demands.

The effectiveness of Oxweld railroad service is largely due to being organized for action.

The Oxweld Railroad Service Company

CHICAGO, Railway Exchange Bldg. 30 Church St., NEW YORK

$2,500 a Year Saved in Each of Six Offices

Portable
Occupies less than
a square foot.

That the

MONROE
Calculating-Adding Machine

is "doing a man's part and more" is attested by the statement of Mr. Appleton, Chief Clerk in the office of the Vice-President in charge of operation, Santa Fe Railroad, Chicago:

"The only way to keep up with these times when enough help is simply not obtainable is to turn to machines that will do more work with less help.

"One or two Monroe Calculating Machines in the division superintendent's offices saved *3 clerks, which means $2500 a year in each of 6 offices,* after the savings had paid for the machines in about five weeks.

"*These machines are 10 times faster than rail tables on rail extensions—for verifying payrolls they are wonderful.*

"This method has proven best on about 80% of the work of these offices, such as payrolls and material distribution, rail and tie reports, gang time reports, grading areas and costs and rail statistics.

"Its great simplicity makes any one of the men a user after an hour's demonstration, while its accuracy makes many former checking operations unnecessary."

If you are not already familiar with what the Monroe can do as an able substitute for man-power, it will pay you to have a Monroe man call and show you how any clerk or assistant can apply the machine, after a single demonstration, to your Payrolls, Costs per Ton Mile, Percentages of Increase and Decrease, Cents per Car Mile, Ticket Reports, Freight and Passenger Accounting, Estimates, Engineering Problems, etc.

The Monroe is used by all the departments of the United States Government, by the country's principal railroads, by business organizations everywhere. Without cost or obligation you may have a Monroe man call and demonstrate, on your own work just what savings you may expect from the hands of any of your clerks or assistants.

It will pay you to clip and mail the coupon to-day.

Monroe Calculating Machine Company

General Offices, Woolworth Bldg., New York

Plant at Orange, N. J. **Offices in Principal Cities**

Send this Coupon and learn without cost what the MONROE will do on your own figure work

To Monroe Calculating Machine Co., Woolworth Bldg., New York, N. Y.

Please give us (check the item desired):

☐ Further information concerning the Monroe Calculating Machine and how it will save time figuring percentages of increase and decrease, costs per ton mile, prorating, freight and car accounting, etc.

☐ A demonstration in our own office

Company Name.....

Individual's Name.....

Address.....

(R. A. G. 1-18)

An Otis Achievement Important in the Handling of Freight at Terminals

THE cutting down of congestion at the terminal is today receiving the consideration of all Operating Heads. Every time and labor saving device or method is being utilized.

The Otis Operatorless Elevator has been developed to facilitate the vertical movement of trucks, to use them at their greatest advantage—to derive from them the maximum of service and economy.

Push Button Automatic Control eliminates the necessity of using an operator. The handler of the truck can control the elevator. By merely pushing a button the elevator is brought to the desired floor and the doors open automatically. Important as are these features in the saving of time and money more important still is the Automatic Leveling device which registers with accuracy the platform with the landing under every and all conditions of loading.

Thus is made possible one of the most important principles of L. C. L. freight handling—the retaining of the freight on the same wheels from the inception of the movement until it reaches its destination.

As such it ranks among the valuable contributions to the terminal congestion problem of recent years.

OTIS ELEVATOR COMPANY

Eleventh Avenue and Twenty-Sixth Street

NEW YORK

Offices in All Principal Cities of the World

NICHOLSON

A Shearing Cut Without Channels or Furrows

That is the kind Nicholson Files give. The teeth of Nicholson Files are so formed as to have a keen cutting edge combined with strength to withstand pressure, and ability to free themselves from chips.

NICHOLSON U.S.A. (TRADE MARK)

NICHOLSON U.S.A. (TRADE MARK)

While we carry over 6000 varieties in stock, there are two grand divisions of Nicholson Files, namely, the Increment Cut Files for all ordinary work, and the X-F Swiss Pattern Files for jewelers, watch and tool makers.

Nicholson Files are not only the standard of America, they have a world-wide reputation. Some of New England's rugged honesty of character went into Nicholson Files 52 years ago—and has stayed there.

Send for a copy of "File Filosophy" —it will help and interest you.

BY INVITATION MEMBER OF

NICHOLSON FILE COMPANY
PROVIDENCE - R. I., U. S. A.

Why The Iron Rivet?

Long comparative service tests have demonstrated the superiority of Burden Iron Rivets over steel rivets.

What happens to the steel rivet? Snap! and off drops the head—then damage and expense.

Remember this one big point: A Burden Iron Rivet "drives" up to stay driven.

Years of shocks, expansion and contraction from heat and cold—even corrosion will not affect the Burden Iron Rivet, the rivet of long life as proved by years of constant use. Let us show records not only of laboratory tests, but also actual service tests under varying conditions.

The Burden Iron Company

Troy, New York

Goodrich Air Brake Hose

An Inventory With a Moral

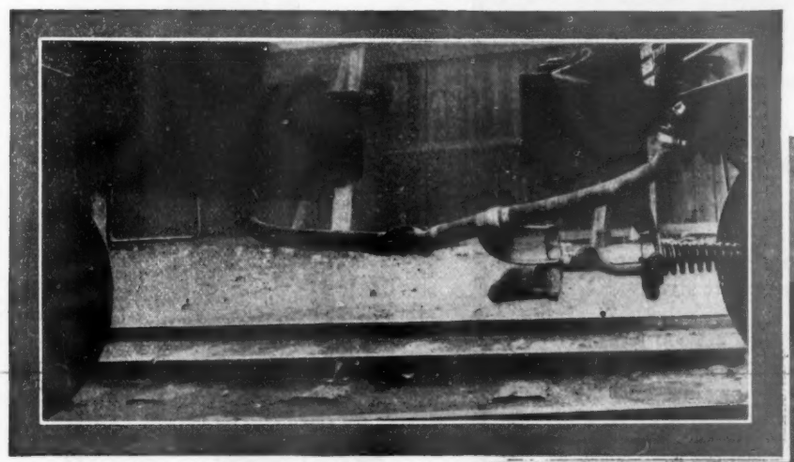
The storekeeper of one of the big Eastern railroads after taking an inventory of his Air Brake Hose scrap pile, reports—

"Of all the brands examined, the biggest percentage of the Hose used the longest was **GOODRICH** Air Brake Hose. The Hose had been taken indiscriminately from freight cars all over the United States. The **GOODRICH** Hose was by far the best."

It is a fact, as all Air Brake inspectors know, that thousands of Air Brake Hose are thrown on the scrap pile because of *check cracks* in the *cover* although the body of the Hose is intact. Not so the **GOODRICH** product. It resists the weakening effects of weathering, and ages well.

GOODRICH not only makes Air Brake Hose to the Master Car Builder's specifications—but make it better by a wide margin.

GOODRICH
AIR BRAKE HOSE



THE B.F.GOODRICH RUBBER COMPANY

Makers of the Celebrated Goodrich Automobile Tires —*"Best in the Long Run"*

Factories: Akron, Ohio —The City of Goodrich

Representation Everywhere

TRADE MARK

Solves the Freight House Labor Problem

Canton Portable Freight House Crane

Labor shortage is no handicap to a freight station using the Canton Portable Freight House Crane. With this Hoist, one man can handle heavy loads with ease and safety and in less time than eight strong men could without it.

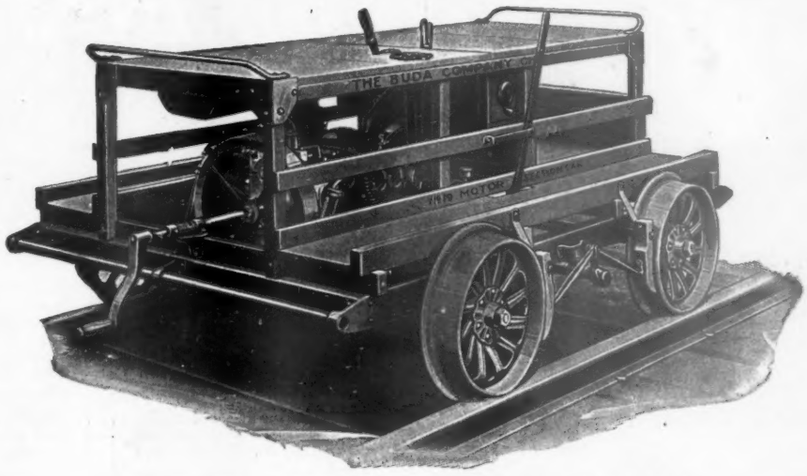
Illustration shows one man lifting 4 steel beams y5 in. wide and 15 feet long, weighing 600 lb. each—a total of 2,400 lb. Think of the saving of time and labor! Photograph was taken at the freight station of a prominent eastern railroad. Freight Agent says: The Canton has paid for itself many times over."

Twenty-one (21) prominent railroads use and endorse this great time and labor saving freight house crane.

Write for the Canton Booklet. It shows how to get out more work with fewer men.

THE CANTON FOUNDRY & MACHINE COMPANY
Canton - - Ohio

A Canton for Every Station
"The Freight House Jewel."



A Buda No. 19 Motor Section Car Ready for the Gang

Keeping the Gang Contented

Each man in the gang represents a certain amount of energy in which you invest your money every pay day. To require him to "pump" a hand car to and from work and for carrying tools, etc., is wasting man power that should be saved with a Buda Motor Car.

You cannot give your gangs a motor car that will please them more than a Buda because it has a four cycle, tree-running engine with a speed range from 3 to 20 miles an hour, starts by cranking instead of pushing the car, and is very reliable. It keeps the men contented.

See that every section gang, bridge gang and track gang has a Buda motor car this year. They will put it to uses that will earn its cost and upkeep long before another year rolls 'round.

And keep in mind the fact that no motor car can give quite such good service as the Buda. Let us mail you a pamphlet that will teli you more about why this is true.

THE BUDA COMPANY

NEW YORK CHICAGO ST. LOUIS

Automobile Motors | Crossing Gates | Bumping Posts | Motor Cars & Velocipedes | Portable Grinders | Jacks | Track & Bonding Drills | Electric Trucks

"Buda Products Serve the Best"

The Star Which Indicates Service

Time is Valuable Today

AND

Here is a Wrench That Saves It

A WRENCH that wastes time has no place in railway repair work or repair kit. Time counts as well as strength today—a wrench possessing great reserve strength and quick action—that's the wrench for Railway Wartime Service.

Take a "Coes" in your hand. Yes, that is it, the

"COES" RAILWAY WRENCH

A strong wrench! You are right, it is, fully 30% stronger than any other wrench made. Why man, that wrench will last 30% longer than any other wrench, yet it costs you but 5% more, and remember the "Coes" will stand every test—hottest temperatures one minute—coldest the next. Steam and moisture affect not this wrench which

Insures Enduring Service

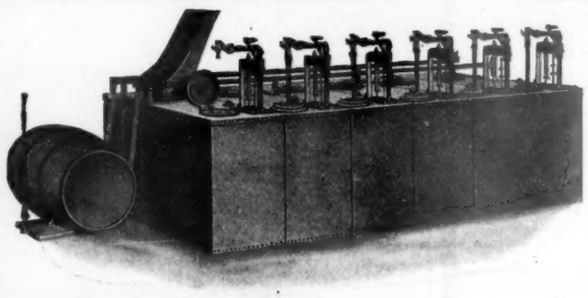
COES WRENCH CO

Worcester, Mass., U.S.A.

Agents: J. C. McCarty & Co.
29 Murray St., New York.
438 Market St., San Francisco, Cal.
1515 Lorimer St., Denver, Colo.

Agents: John H. Graham & Co.
113 Chambers St., New York.
118-122 Holborn, E. C. London.
Fenwick Freres, Rue de Rocroy, 8, Paris, France

The name which insures wrench service



BOWSER

The satisfactory solution of handling oils; saves time, labor and trouble. Oils retain original qualities — are kept off floor, thus abolishing hazard of fire. An accurate record of oils bought and used.

Systems built to meet any requirement, for any capacity, hand or power operated.

BOWSER

The last word in the efficiency of storing, handling, distributing and caring for oils. Pumps equipped with self-measuring devices discharging any number of gallons or intermediate quantities.

Thirty-two years' experience as manufacturers and original patentees of oil handling equipment enables us to offer to those requiring such systems a service unequaled.

Write for Interesting Booklet

S. F. Bowser & Co., Inc.

Fort Wayne, Ind., U. S. A.

Sales Offices in All Centers

Representatives Everywhere

Sprague Flexible Steel Armored TANK HOSE

GIVES SUPERIOR SERVICE

PREVENTS

1—Kinking
2—Chafing
3—Stretching
4—Cutting
5—Bursting
6—Collapsing

Steel armor protects hose from all external injuries caused by elements of the weather, flying ballast, etc.

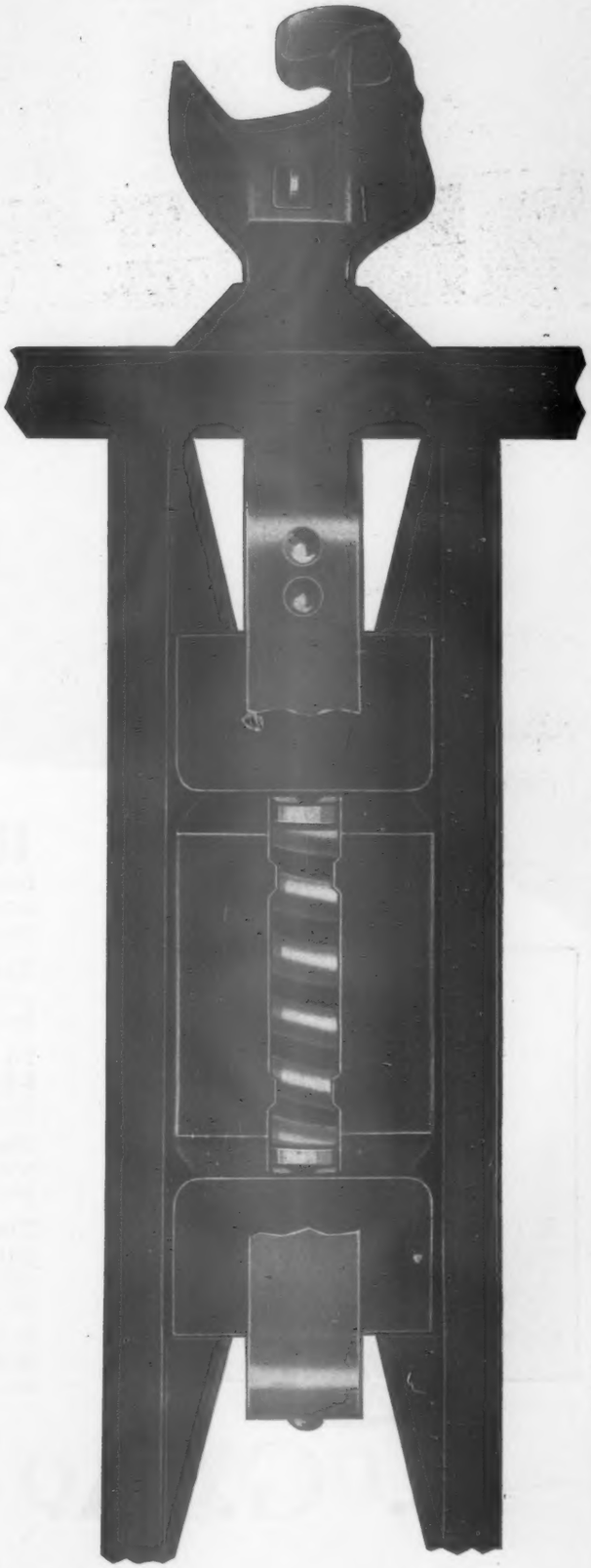
Special Fittings Not Required

For further particulars send for Catalogue No. 52135

SPRAGUE ELECTRIC WORKS
OF GENERAL ELECTRIC COMPANY
Main Offices:
527-531 West 34th Street, New York, N. Y.
Branch Offices in Principal Cities

Murray Cast Steel Friction Draft Gear

IF the superiority of this device has never been apparent to you, it will be upon thorough investigation. For it will reveal that our claims for excellence are based on actual facts.



In use on thousands of cars

KEYOKE RAILWAY EQUIPMENT CO.

GENERAL OFFICES
MONADNOCK BLOCK
CHICAGO, ILL.

1240 Monadnock Building
Chicago, Ill.

RAILROADS install the most modern automatic and interlocking block signals, create improved methods of maintenance, and then neglect the "light that fails"—that important factor which ties up the signal indication itself and the act of obedience by the man in the cab.

The man in the cab needs a clear, distinctive signal indication—an indication whose interpretation cannot be mistaken—an indication that compels attention and obedience.

He knows what it means to feel his way through darkness or fog—knows the nervous strain of maintaining speedy schedules on dim or uncertain signal lights.

The oil light is not uniform in its intensity—the electric light will burn out. Both the oil and the electric light when clear are often confused with other lights, even in good weather.

The A. G. A. Flashlight gives a distinctive flash signal—an intermittent acetylene signal light that stands out from all other lights—a signal light of great fog-penetrating power, uniform intensity, and low maintenance cost.

It flashes the signal message, "Stop," "Caution" or "Proceed," to the engineer through fog, rain or sleet—attracts his attention and compels observance because of its animated character.

Advantages

Low Maintenance Cost.

Readily Applied to Existing Signals.

Uniform Light.

Penetrates Fog.

Simplifies Signal Indications.

Compels Attention.

AGA

A. G. A. Railway Ligt

Elizabeth, J

BRANCHES

Boston
683 Atlantic Ave.

Chicago
857 Peoples Gas Bldg.

THE A. G. A. flash signal makes it possible to simplify your present signals and to create new ones. It will enable you to eliminate marker lights on automatics, manual block and distant switch signals.

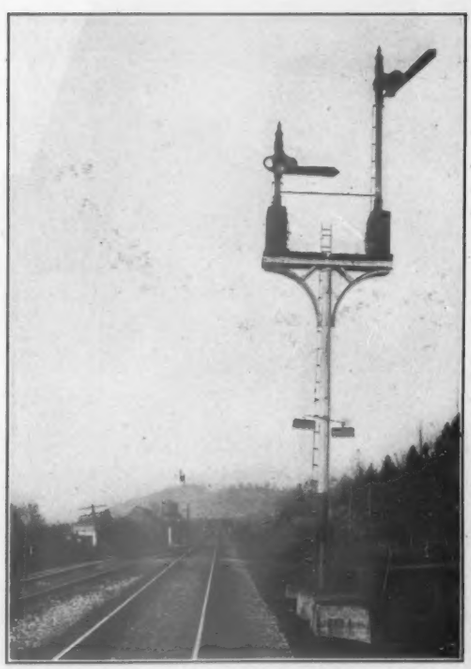
Interlocking home signals can be distinguished from automatics—low speed routes from main line moves. The intermittent character of the A. G. A. Flashlight distinguishes it from all others and attracts especial attention. Flashes can be adjusted to one, two or three seconds intervals.

The A. G. A. Flashlight is no experiment. It is in service on the Boston & Maine, Norfolk & Western, Missouri Pacific, Chesapeake & Ohio, Atlanta & West Point and other railroads.

It is easily attached to existing signals—made to fit standard semaphore lamps—reduces lamp maintenance.

The universal use of A. G. A. Flashlights by the U. S. government for light-house service is a tribute to its absolute reliability and unquestionable efficiency.

Write nearest branch office for the A. G. A. Flash Signal Booklet. It gives the facts and figures.



A. G. A. Flashlight on the Norfolk & Western

igt & Signal Company

Jersey

BRANCHES

Toronto
18 Toronto Street

Washington
Metropolitan Bank Bldg.

H&K Pressed Metal Parts

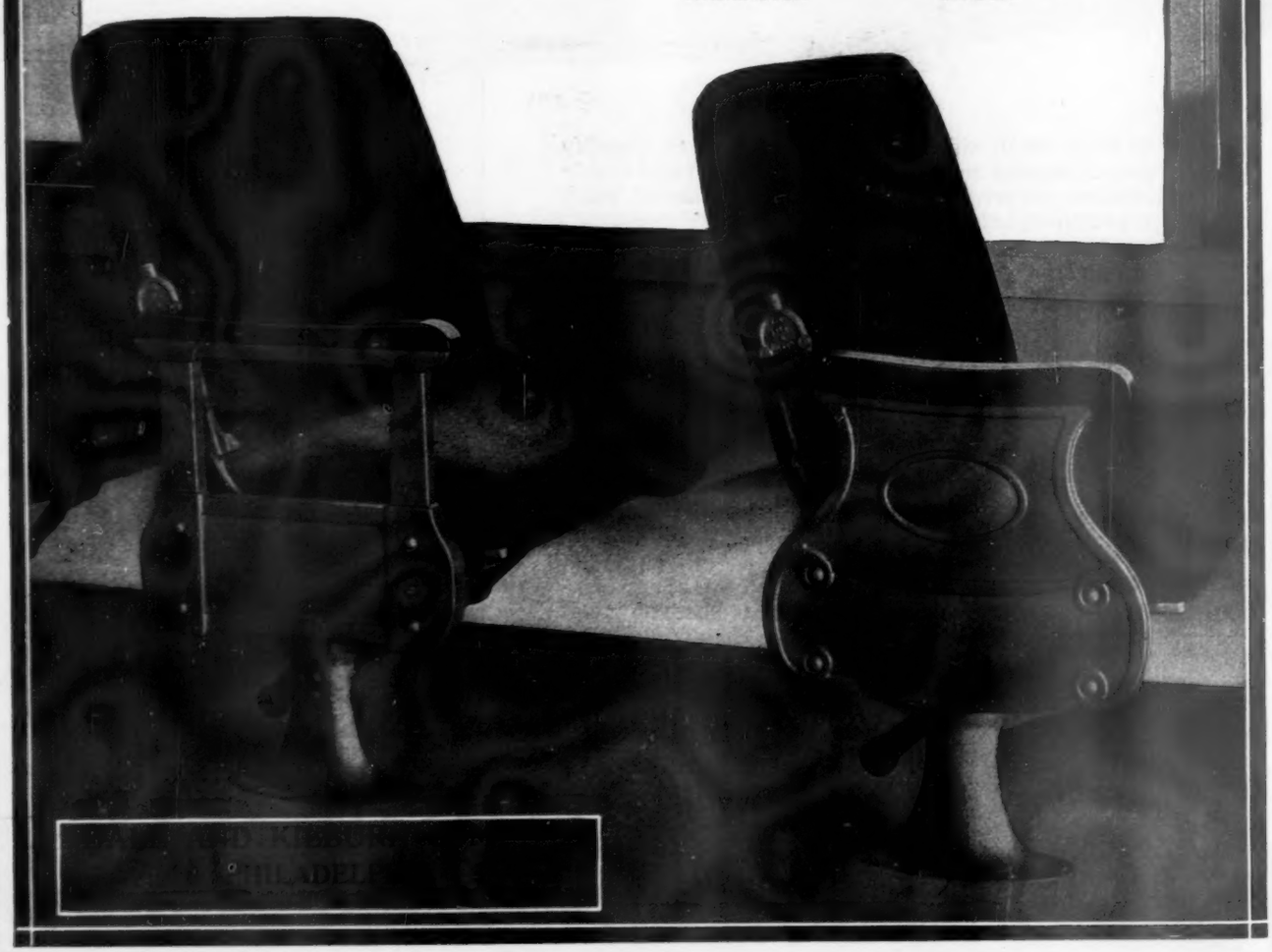
Quickly Available for
Governmental,
Manufacturing,
Railroad, or
Kindred Purposes

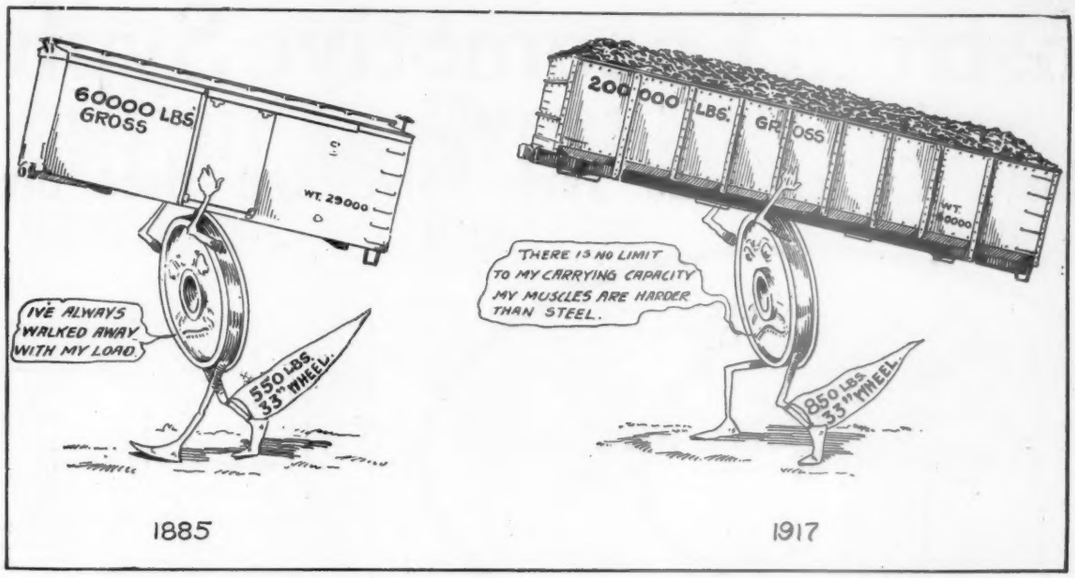
PRESSED, Drawn or Stamped Metal Parts are slowly but surely winning their way into practically every kind of service, and can now be supplied in short order, at the Largest Works in the World devoted to the manufacture of Steel Car Interiors and Furnishings, which have set new standards of economy and dependability since the inception of the Steel Passenger Car.

Largely increased facilities enable us to announce our preparedness to quickly execute contracts for all kinds of Pressed, Drawn or Stamped Metal Parts (light or medium). We feel sure of accomplishing big savings for every user of H&K Steel Parts. Where the question is Minimum Weight, with Maximum Strength, and Lowest Cost, the answer is: Use Triple Utility (H&K) Pressed Steel Parts.

Inquiries Cordially Invited
Blueprints or Samples to Nearest Office

HALE AND KILBURN COMPANY
PHILADELPHIA
NEW YORK CHICAGO DETROIT
WASHINGTON LONDON




60000 LBS GROSS
WT. 29000
I'VE ALWAYS WALKED AWAY WITH MY LOAD.
550 LBS. 33" WHEEL.
1885
200000 LBS. GROSS
WT. 40000
"THERE IS NO LIMIT TO MY CARRYING CAPACITY MY MUSCLES ARE HARDER THAN STEEL.
850 LBS. 33" WHEEL.
1917

ITS THE CHILLED IRON CAR WHEEL THATS CARRYING THE FREIGHT OF THE NATION.

The Wonderful Single Service Chilled Iron Wheel

There is no metal used for car wheel purposes that possesses the BEARING POWER of Chilled Iron.

The loads that Chilled Iron wheels will carry are only limited by the carrying capacity of the rail.

The present type of rail will carry about 30,000 lbs. per wheel.

Chilled Iron will carry 200,000 lbs. per wheel without any evidence of distortion of Metal, because Chilled Iron will not crush or flow under heavy loads.

25,000,000 Chilled Iron wheels now running.

ASSOCIATION OF MANUFACTURERS OF CHILLED IRON WHEELS

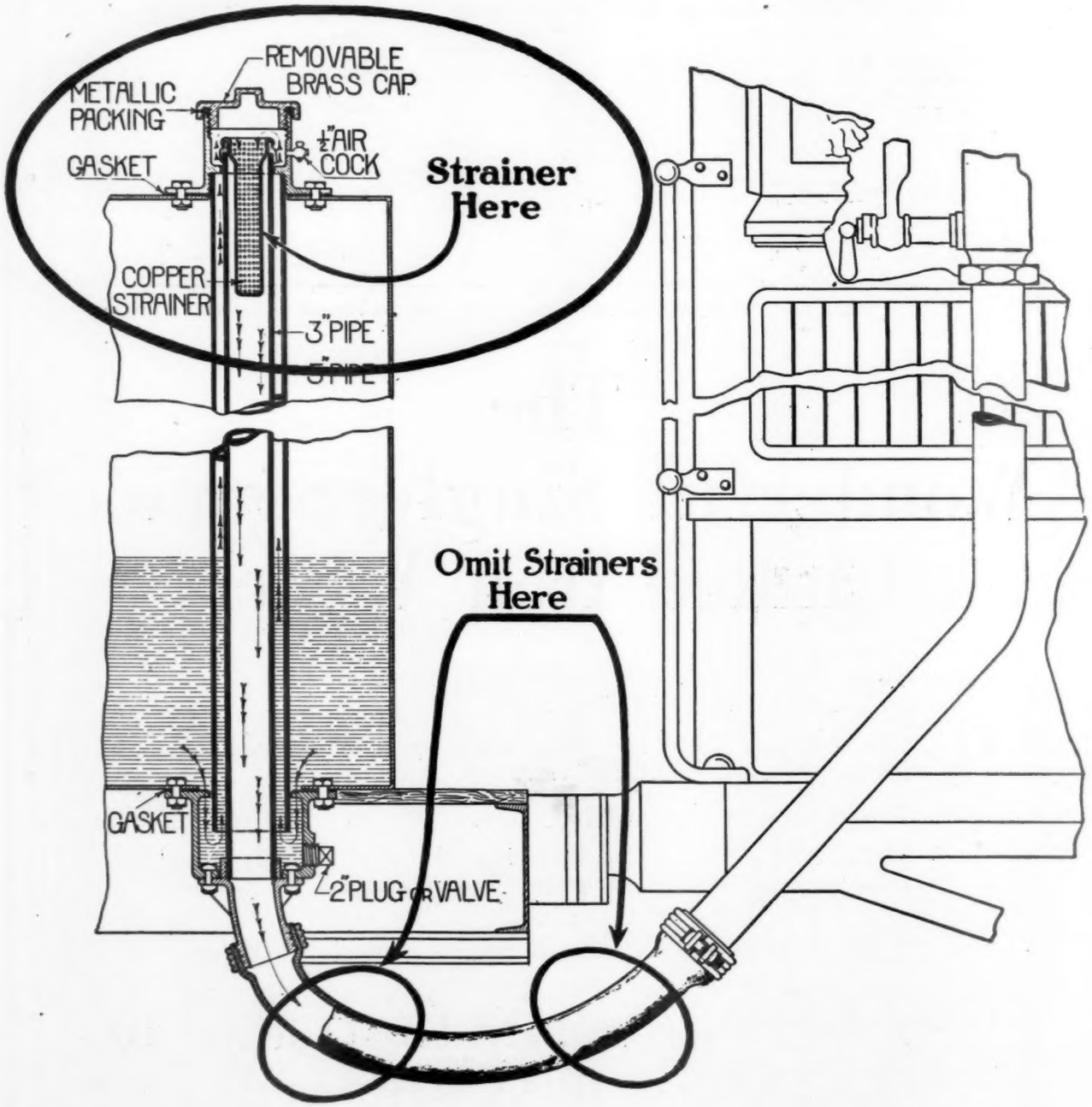
1228 McCormick Building, Chicago. Illinois

Representing forty-eight wheel foundries throughout the United States and Canada.
Capacity, 20,000 Chilled Iron Wheels per day.

Linstrom Locomotive Syphon

PATENTED

Eliminates Entirely, The Tank Valve And Hose Strainer

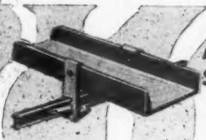


Western Railway Equipment Company

St. Louis **Missouri**

AMERICAN STEEL FOUNDRIES

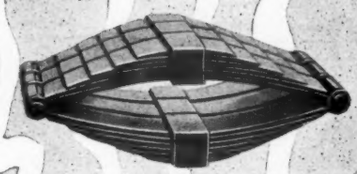
NEW YORK CHICAGO ST. LOUIS



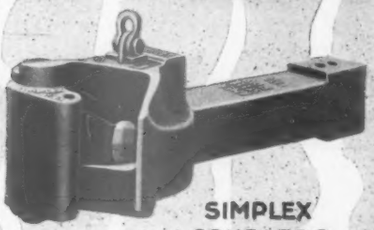
ATLAS SAFETY GUARDS

DAVIS STEEL WHEELS

AJAX AND HERCULES BRAKE BEAMS



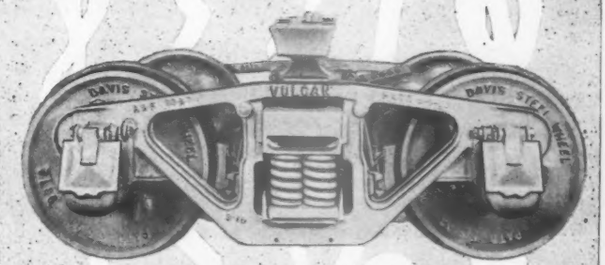
SPRINGS



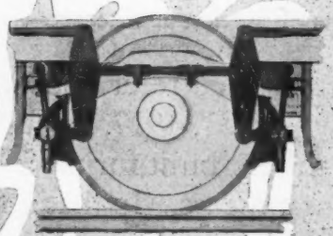
SIMPLEX COUPLERS

ECONOMY DRAFT ARMS

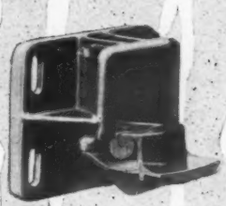
CAST STEEL BOLSTERS



VULCAN TRUCKS

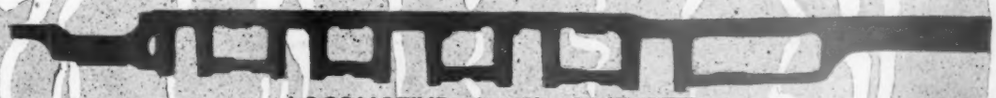


SIMPLEX CLASP BRAKES



SIMPLEX COUPLER POCKETS

ECLIPSE CAST STEEL COUPLER YOKES



LOCOMOTIVE STEEL CASTINGS

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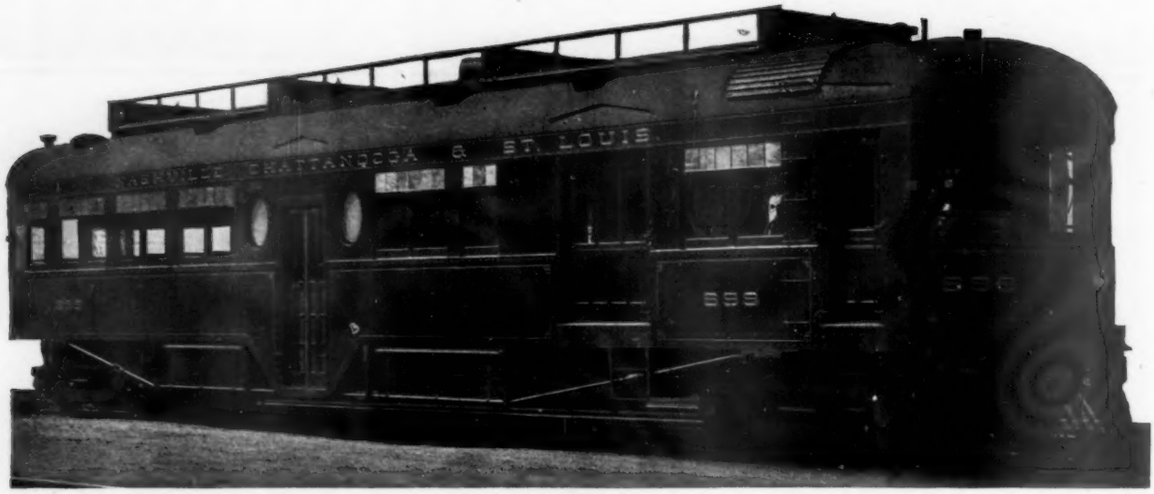

Most Powerful!

Branch Line Service is nearly always a losing game. But it shouldn't be. This is what the *Railway Age Gazette* says about the

Beach Oil Electric Car

"This car is the most powerful self-propelled car yet constructed. * * * * It is designed to take the place of steam train service on branch lines and small railways where such service is unprofitable. The power plant in the car is of particular interest."

And it is of particular interest. We refer you to the *Railway Age Gazette* of August 31, 1917, page 381, where a good description of the car built for the Nashville, Chattanooga & St. Louis appears. In that article you will learn something NEW about self-propelled cars—it is worth reading.

Our engineers will be of assistance in determining where your branch line losses may be made to show profits.

Electric Car & Locomotive Corporation
Ralph H. Beach, Pres.
165 Broadway, New York, N. Y.

CAMEL COMPANY

332 So. Michigan Avenue, Chicago, Ill.

Camel No. 27 Door Fixtures
Camel No. 30 Door Fixtures
Camel No. 32 Door Fixtures
Camel Bottom Hung Door Fixtures
Security No. 5 and No. 8 Door Fixtures
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End Door Fixtures
Camel Burglar Proof
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For Box Cars
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in either
Steel or Wood

Burglar, Spark, Storm Proof DEVICES FOR DOORS

J.M. Hopkins, Pres.; P. M. Elliott, Vice-Pres.; W. W. Darrow, Secy.

JONES CAR DOOR COMPANY

Not Incorporated

Branch of Camel Company

Jones Door Fixtures

Jones Peerless Door Fixtures

Belden D. Jones, Mgr., Monadnock Block, Chicago, Ill.

CHICAGO CAR DOOR COMPANY

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Chicago Car Door Fixtures

Climax Car Door Fixtures

E. F. Luce, Mgr., 332 S. Michigan Ave., Chicago, Ill.

95%

of the

STEAM RAILROAD EQUIPMENT

in the

UNITED STATES, CANADA and MEXICO
is equipped with Chilled Iron Wheels.

Their moderate initial cost and low maintenance cost make them an economical wheel to use.

All of our foundries are equipped for turning axles, boring and mounting wheels.

GRIFFIN WHEEL COMPANY

McCormick Building **Chicago, Ill.**

Foundries:

Chicago **Detroit** **Tacoma** **Denver** **Kansas City** **St. Paul** **Los Angeles** **Boston**

From 0.0005 POUND *To* 400,000 POUNDS

A FINE wire nail weighing $\frac{1}{2000}$ pound and a gigantic steel casting weighing 200 tons represent two extremes which clearly convey an idea of the wide range of steel products manufactured by

MIDVALE STEEL & ORDNANCE COMP'Y

CAMBRIA STEEL COMPANY

GENERAL SALES OFFICES

WIDENER BUILDING - PHILADELPHIA, PENN.

Partial List of Products

Alloy and Tool Steels
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Agricultural Steels
Axles
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Boiler Tube Safe Ends
Charcoal Iron Boiler Tubes
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Crank Pins and Piston Rods
Forgings, All Kinds
Flanged and Dished Heads
Heavy Guns and Their Mounts
Locomotive and Car Wheel Tires
Machine Bolts
Ordnance Material
Pipe or Tank Bands
Plow Steel
Pressed Steel Seats for Agricultural Implements
Projectiles
Rifle Barrel Steel
Rivets
"Slick Steel Mine Ties"
Stamp Shoes and Dies
Steel Tired and Rolled Steel Wheels
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Steel Cars
Steel Rails
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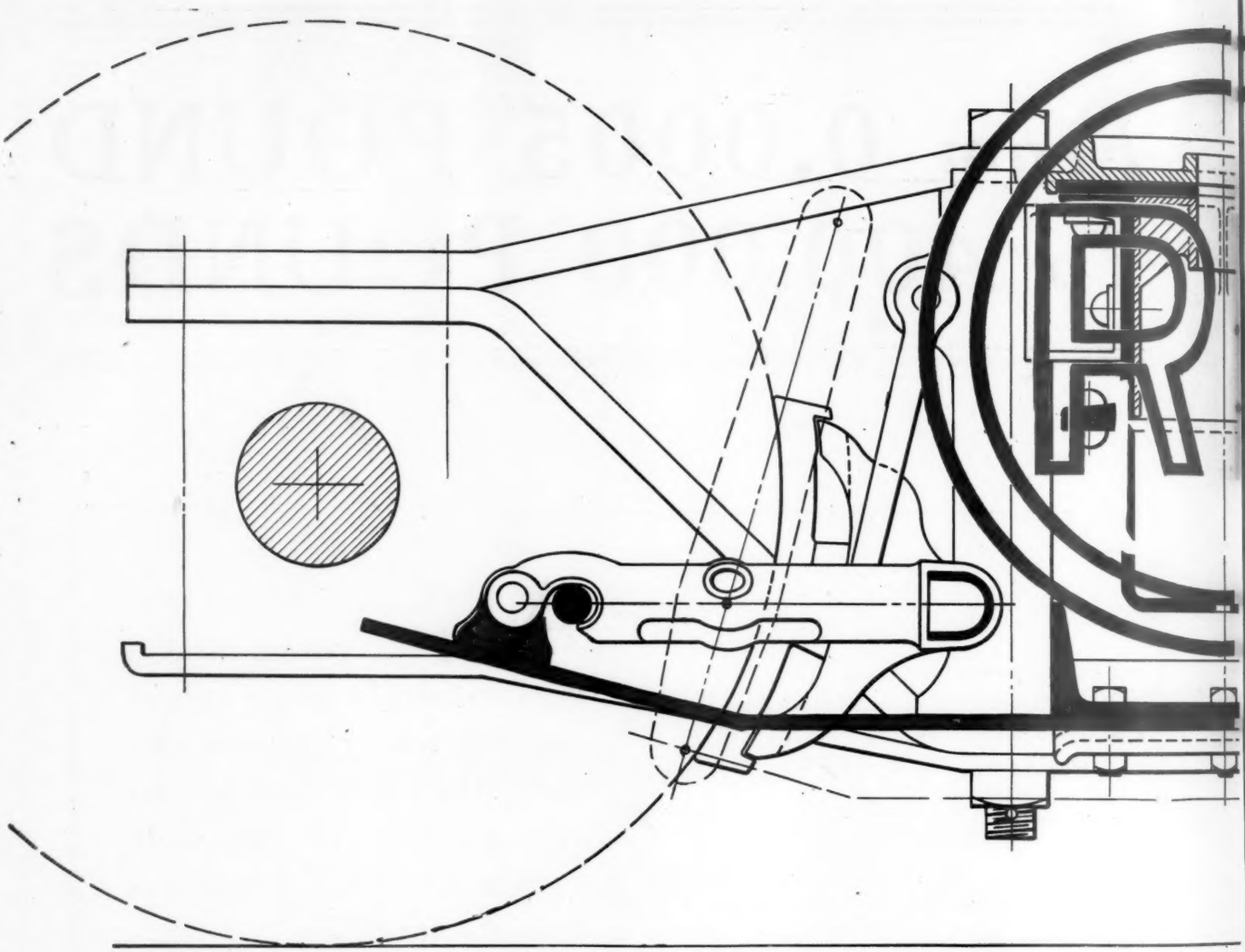
"We Want You to Become Better Acquainted With Us" Series. Number 36.



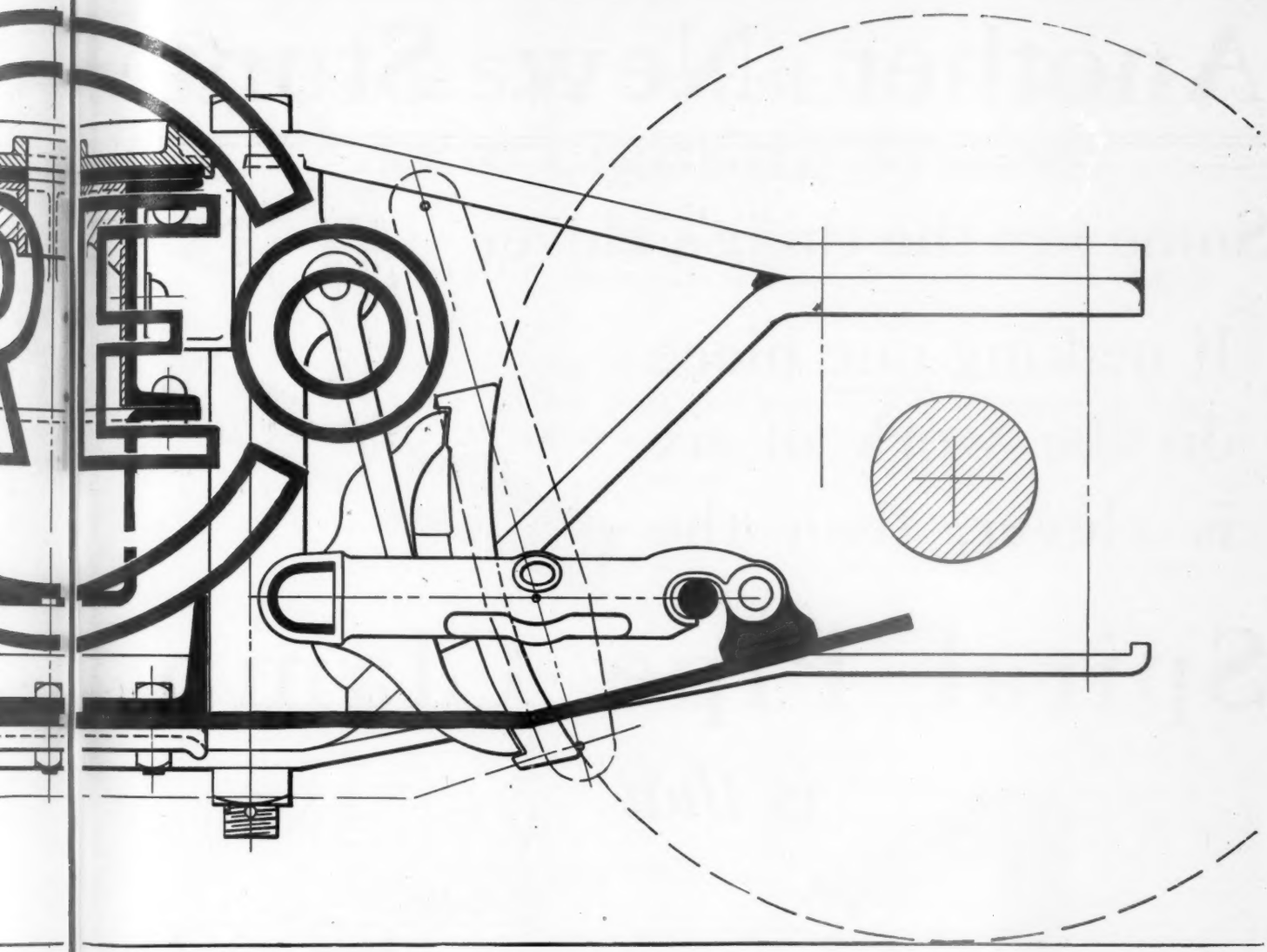
Over 2½ million shoes a year are wasted by improper brake beam support.

Creco Third Point Support maintains support at the right place and holds the shoes in proper relation to the wheels.

CHICAGO RAILWAY

McCormick Bldg. *The World's Brake*

RECO THIRD POI



This means even wear of shoes and increased braking efficiency; increased earning power, elimination of waste, saving in labor and absolute safety without safety appliances.

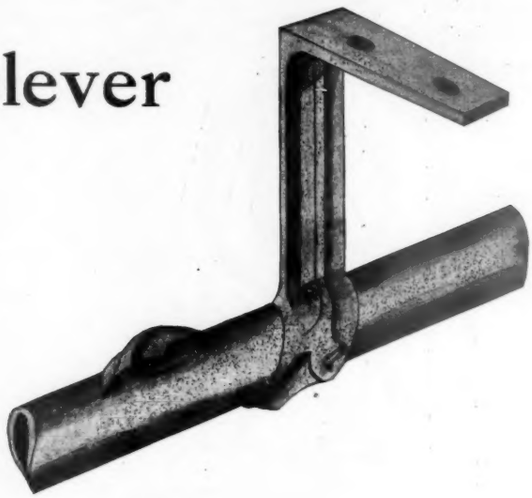
EQUIPMENT COMPANY

Beam Builders **Chicago, Illinois**

INT SUPPORT

Another New Stunt

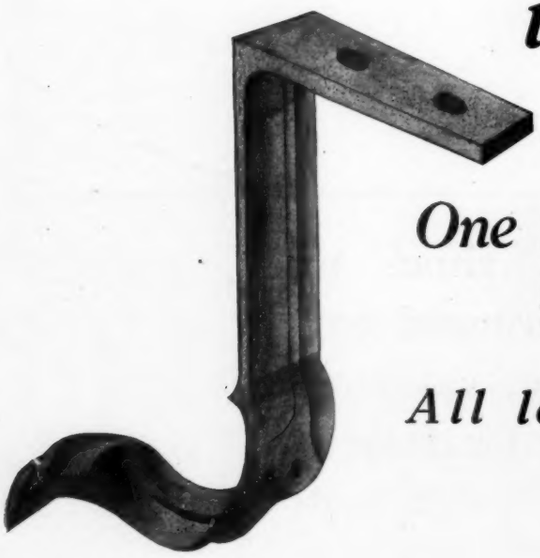
Some say the thing's clever



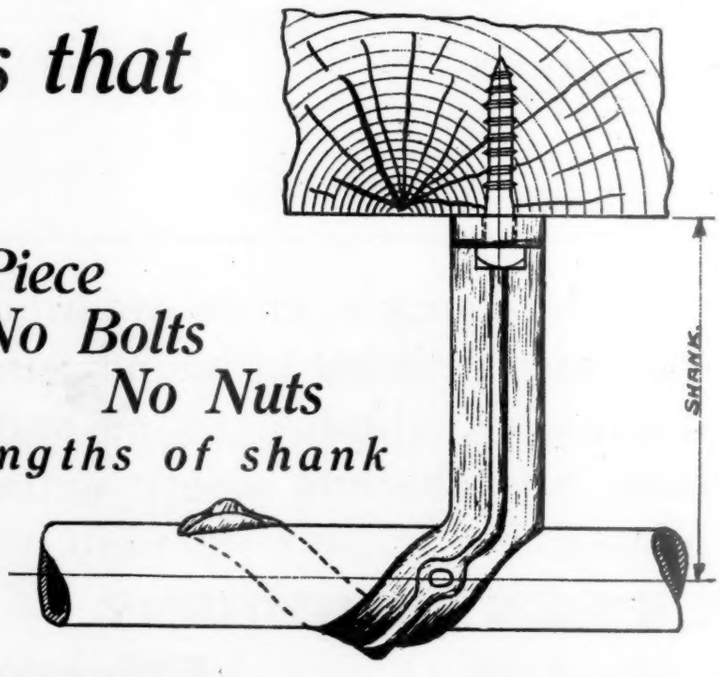
If making <u>one</u> piece
do the work of <u>six</u>
is clever, then the

Spiral Pipe Clamp

is that



One Piece
No Bolts
No Nuts
All lengths of shank



Does this mean anything to you?

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SAINT LOUIS MISSOURI

The E.S.B. Constant Voltage Axle Lighting System

Simple in construction and dependable in operation—those are the characteristics which distinguish the E. S. B. Constant Voltage Axle Lighting System.

In the battery you find the well known and thoroughly proven Manchester Positive and Box Negative Plates—nothing experimental. The details of assembly include the latest improvements in lead lined slatted crates.

The combination of a dependable system and a battery which *has demonstrated its merit* makes the E. S. B. Constant Voltage Axle Lighting System the ideal apparatus for car lighting.

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The E. S. B. Control Panel requires no lamp regulator and needs no adjustments.

The constant voltage control insures maximum plate life.

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Bulletins No. 154 and No. 161 contain interesting illustrated matter on the system and the battery. We would like to send you copies of each.

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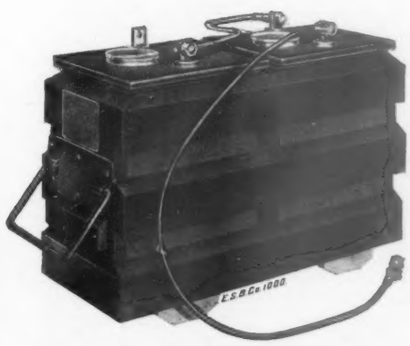

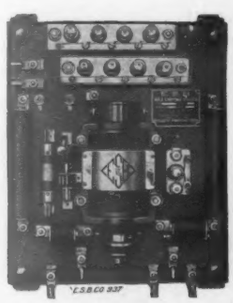

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Safety of construction, safety of travel and Pullman workmanship are important features of Pullman Passenger Car Service.

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Pullman Passenger Cars

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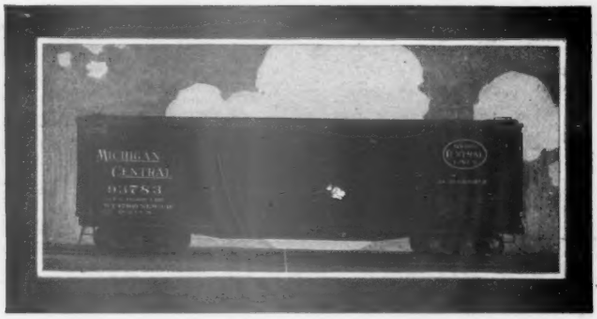

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At the "O. K." position in Pullman Freight Car Shops the inspectors go over the work, test rivets and watch for any imperfection that may have crept in during construction. All faults are rapidly corrected and the car rolls on to the shipping track.

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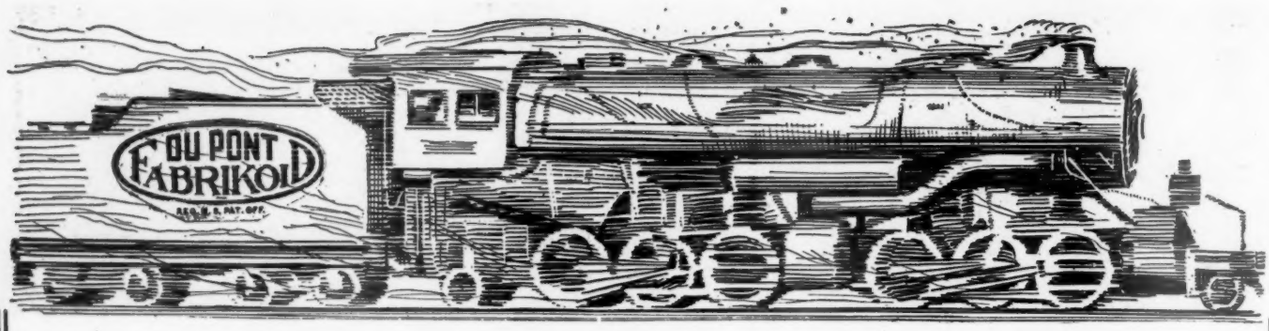

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Pulverizer Mills, Crushers, Dryers, and Pulverized Coal Feeders

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Atchison, Topeka & Santa Fe Railroad, Locomotives.
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Lackawanna Steel Co., Calcining and also Flue Dust Nodulizing Kilns.
Missouri, Kansas & Texas Railroad, Steam Boilers.
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Sizer Forge Co., Heating and Forging Furnaces.
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Stone & Webster, Steam Boilers.
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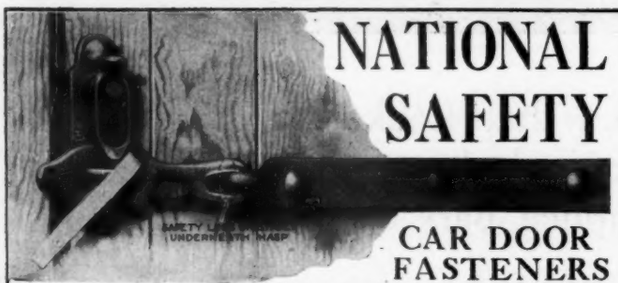

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CAR DOOR FASTENERS
INSURE AGAINST THEFT
WRITE FOR CIRCULAR NO. 54
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SHARON, PA. MELROSE PARK, ILL.

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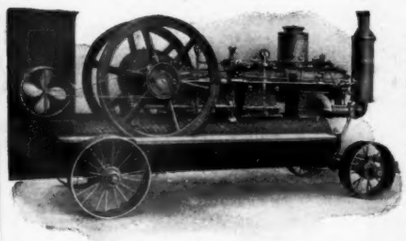

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Branches Everywhere. A-4

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Designers and Builders
All Classes Freight Cars
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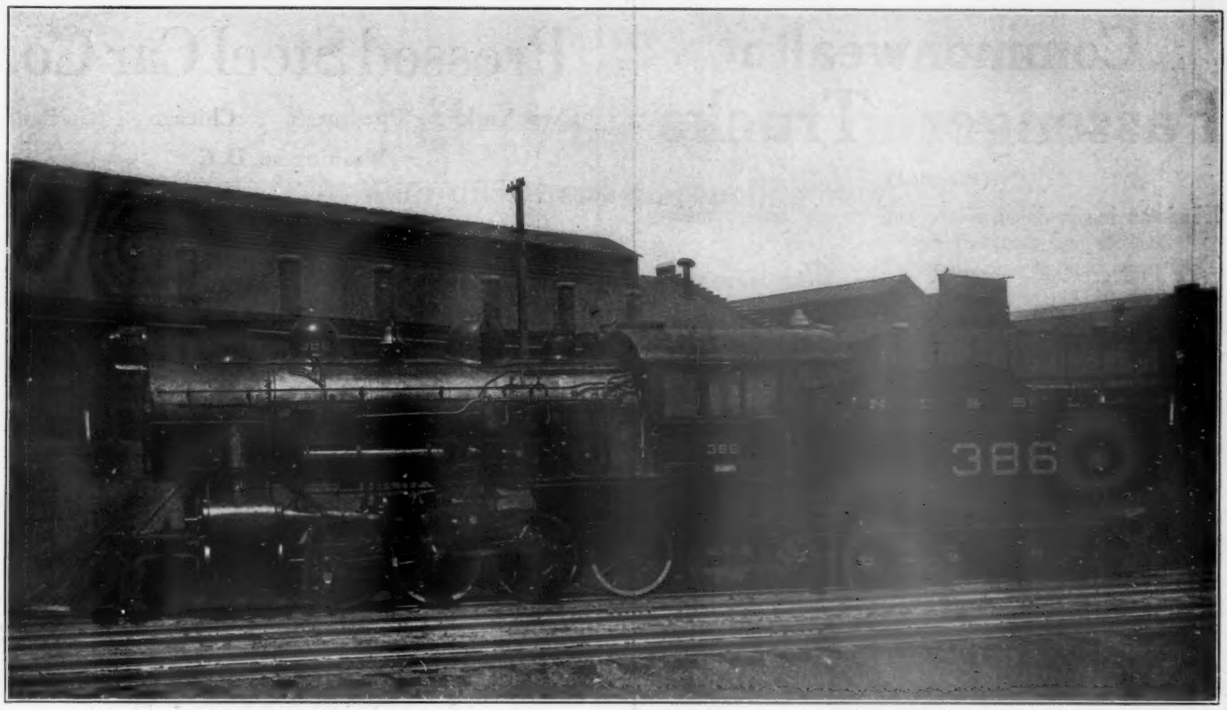

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(Patented)

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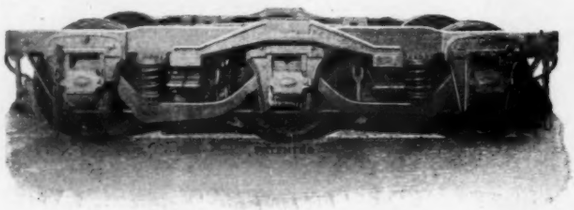
They provide great strength with flexibility,
Perfect alignment of pedestals,
Accurately spaced pedestal bolt holes,
Even wear of pedestals, boxes, journals, etc.,
And ease of inspection.



Note the wonderful facility for obtaining any contour of cross members for clearance, without sacrificing strength; and for making the frame members wide or narrow to secure uniform stresses.

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Length 34'—3½". Weight 11,075 lbs.

Vanadium and Carbon Steel

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Miscellaneous
Locomotive
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With underneath uncoupling rods.

Uncoupling Rods clear all train pipes and other platform attachments.

Uncouples from both sides of car or one side only, if desired.

Uncoupling Rods rotate for uncoupling same as on freight cars.

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THE McCONWAY & TORLEY CO.

PITTSBURGH, PA.

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Write for Folder
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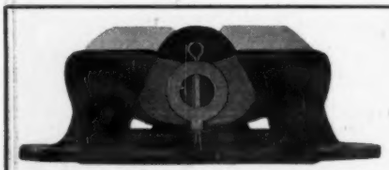
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THE DAMASCUS BRAKE BEAM CO.
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ANNUAL CAPACITY, 25,000 TONS
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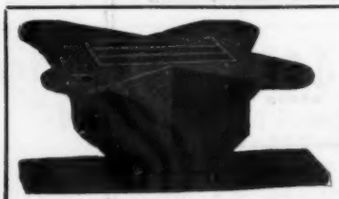
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KARBOLITH CAR FLOORING—for steel cars is sanitary, fireproof and light in weight.
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Will relieve Wheel Flange and Coupler Knuckle wear, also any wear on Journal Bearings.
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4633

Railway Age

Vol. 64 January 4, 1918 No. 1

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William G. McAdoo

Secretary of the Treasury and Now Also Director General of Railroads

Nation's Railroads Now Under Government Control

W. G. McAdoo Takes Charge as Director General of Railroads

Transferring Control of the Railroads to the Government. Copyright by Harris & Ewing*

WASHINGTON, D. C., January 1, 1918.—The railroads of the United States passed from the control of their individual managements and into the possession and control of the government for the period of the war, at noon on Friday, December 28, under the direction of W. G. McAdoo, who now combines the office of Secretary of the Treasury in President Wilson's cabinet with that of Director General of Railroads. Although for accounting purposes the new plan of government control did not become effective until midnight, December 31, by that time the director general had issued several general orders to emphasize the fact that the railroads are to be operated as a co-ordinated system, had accepted the resignation of the Railroads' War Board (the Executive Committee of the Special Committee on National Defense of the American Railway Association), and had created an entirely new organization for centralizing the direction of railroad operations. He had also put in motion all the available machinery of organization for the purpose of relieving congestion and expediting the movement of freight.

The New Organization

The new organization consists of a temporary advisory committee or cabinet of assistants to the director general as follows:

John Skelton Williams, controller of the currency and formerly president of the Seaboard Air Line, as advisor on financial matters.

Hale Holden, president of the Chicago, Burlington & Quincy and a member of the former Railroads' War Board, to supervise the organization built up by the War Board, including the Commission on Car Service and the various sub-committees.

Henry Walters, chairman of the Atlantic Coast Line, as operating advisor.

Edward Chambers, vice-president in charge of traffic of the Atchison, Topeka & Santa Fe, and chief of the division of transportation of the United States Food Administration, as advisor on traffic matters.

Walker D. Hines, chairman of the executive committee of the Atchison, Topeka & Santa Fe, as advisor on legal matters.

In addition, A. H. Smith, president of the New York Central, was appointed temporary assistant to the director general and assigned to take charge of operation in Official Classification territory. He was also given charge of the organization of the General Operating Committee of the Eastern Railroads, which was dissolved.

Particular attention has been given by the director general in his conferences with the railroad officers, his assistants, the members of the Interstate Commerce Commission and others to the movement of coal to the districts where munitions and other manufacturing plants are located and especially to New England. He has also conferred regarding the situation with officers of the Food and Fuel Administrations, the Shipping Board and the Army and the Navy. For the purpose of promoting the coal movement and relieving congestion instructions were issued to disregard all priority and preference orders. It was announced that Judge Lovett will continue in his office as priority director, but that his orders will be issued hereafter from the office of the director general.

A telegram was sent to the mayor of New York City asking him to detail as many city employees as can be spared to the work of unloading cars at the congested terminals and a plan has been adopted for the common use of the New York and New Jersey water front terminals.

Meanwhile President Wilson and Director General McAdoo are understood to have given further consideration to the terms of the recommendation which the President will

*The photograph at the top of the page shows Director General of Railroads William G. McAdoo surrounded by some of the members of the Railroads' War Board and Mr. McAdoo's legal adviser. Reading from left to right the men are Julius Kruttschnitt, chairman of the executive committee, Southern Pacific; Howard Elliott, chairman, board of directors, Northern Pacific; Mr. McAdoo; Judge John B. Payne of Chicago, general counsel of the Emergency Fleet Corporation and acting in the railroad conference as Mr. McAdoo's legal adviser; Samuel Rea, president of the Pennsylvania, and Hale Holden, president of the Chicago, Burlington & Quincy. Fairfax Harison, president of the Southern and chairman of the Railroad's War Board, is not in the picture.

make to Congress in a message soon after Congress reconvenes regarding the compensation to be paid the railroads in the form of a guarantee based on the average net operating income for the three years ending June 30, 1917, and President Wilson conferred on the subject on December 31 with Chairman Sims of the House Committee on Interstate and Foreign Commerce and Senator Pomerene of the Senate Committee on Interstate Commerce, as these committees will have charge of the proposed legislation.

Mr. McAdoo's Preliminary Statement

On the day following his appointment Mr. McAdoo issued the following preliminary statement.

"This new task is of great magnitude and difficulty. It cannot be done in a moment, and it cannot be done at all unless the people of the United States as well as the officers and employees of the railroads give to the railroad director their intelligent and patriotic support. I earnestly seek the co-operation and assistance of every good citizen in this great work.

"The operation of the railroads as a thoroughly unified system is of fundamental importance to the success of the war. Without it we cannot get the effective use of our resources. The supreme test in this war will probably come in the year 1918. Victory will depend upon our speed and efficiency. We can get neither speed nor efficiency unless the railroads are equal to the demands of the situation.

"I can only say at the moment that the problem will be taken hold of vigorously and that plans and policies will be announced from time to time as rapidly as it is possible to mature them. Meanwhile the business will be conducted through existing railroad organizations, with all the support and power of the government asserted in behalf of more efficient and satisfactory operation.

"The Director General of Railroads, upon invitation of the Interstate Commerce Commission, has accepted office in the Interstate Commerce building. The commission has also placed at the disposal of the director the entire work and facilities of the commission."

The hour of the transition to government control found the members of the Railroads' War Board, Judge R. S. Lovett, director of priority, and John Barton Payne, counsel for the Shipping Board, who had been assisting Mr. McAdoo in a legal way, in conference with the new director general. The railroad executives offered their hearty co-operation and that of their organization in any way desired, and were told that Mr. McAdoo desired the committee to continue to function at least until some better organization could be devised if it were considered desirable to do so. He asked to be more fully informed as to the organization which the railroads had voluntarily developed and which had been directing the operations of the railroads of the country for eight months. There was a general discussion of possible ways for improving the railroad situation by the exercise of the new power delegated to Mr. McAdoo, and he asked the railroad executives to submit to him any suggestions they had to offer. He particularly desired an early report on the possibility of larger and more efficient use of terminals by joint operation. The railroad men also urged consideration of their recommendation of a list of non-essential commodities.

Later in the day, as his first official act, Mr. McAdoo sent the following telegram to the presidents and directors of all railroads coming within the terms of the President's proclamation of December 26:

"Having assumed the duties imposed upon me by, and in pursuance of, the proclamation of the President dated December 26, 1917, you will, until otherwise ordered, continue the operation of your road in conformity with said proclamation. You are requested to make every possible effort to increase efficiency and to move traffic by the most convenient and expeditious routes. I confidently count on your hearty co-operation. It is only through united effort, unselfish service and effective work that this war can be won and America's future be secured."

This request was expressed in general terms to be amplified and made more specific later on and was evidently intended as preliminary announcement of policy more than anything else. However, by this simple request for the use of the most convenient and expeditious routes, it was explained afterward, the laws against pooling, giving the shipper the right to dictate the routing of his freight and prohibiting railroads from making agreements which in ordinary times would be considered "in restraint of trade" but which are now considered necessary to make trade possible, were thrown into the junk-pile. While the laws are still on the books, to be restored to force when the war is over unless Congress by that time sees fit to change or repeal them, they no longer apply to action taken under the authority of the director general.

On December 27 Mr. McAdoo issued a more specific order as follows:

Mr. McAdoo's First Order

"All officers, agents and employees of transportation systems may continue in the performance of their present regular duties, reporting to the same officers as heretofore and on the same terms of employment.

"Any officer, agent or employee desiring to retire from his employment shall give the usual and seasonable notice to the proper officer, to the end that there may be no interruption or impairment of the transportation service required for the successful conduct of the war and the needs of general commerce.

"All transportation systems covered by proclamation and order shall be operated as a national system of transportation, the common and national needs being in all instances held paramount to any actual or supposed corporate advantage. All terminals, ports, locomotives, rolling stock and other transportation facilities are to be fully utilized to carry out this purpose without regard to ownership.

"The designation of routes by shippers is to be disregarded when speed and efficiency of transportation service may thus be promoted.

"Traffic agreements between carriers must not be permitted to interfere with expeditious movements.

"Through routes which have not heretofore been established because of short hauling or other causes, are to be established and used whenever expedition and efficiency of traffic will thereby be promoted; and if difficulty is experienced in such through routing, notice thereof by carriers or shippers or both be given at once to the director by wire.

"Existing schedules or rates and outstanding orders of the Interstate Commerce Commission are to be observed, but any such schedules or rates or orders as may hereafter be found to conflict with the purposes of said proclamation or with this order shall be brought immediately by wire to the attention of the director."

Following the issuing of this order, a supplemental statement was issued as follows:

"Director General of Railroads McAdoo announced today that, pending the organization of a permanent staff, he had requested Walker D. Hines, of New York, to act as assistant pro tempore to the director general of railroads. Mr. Hines has accepted the appointment.

"In like manner the director general has appointed Alfred H. Smith, of New York, as assistant pro tempore to the director general of railroads, in charge of transportation in the trunk line territory east of Chicago and north of the Ohio and the Potomac rivers.

"The director general has called upon all presidents of railroads to take up vigorously and at once with all rail-

roads in their respective territories the matter of common use of terminals and parallel lines, wiping out all competitive prohibitions, if any survive, and waiving any competitive control or solicitation of traffic.

"The director general has specifically requested that all terminal facilities in the Chicago district be treated, in so far as capacity and efficiency will be promoted, as a unit, and that all railroads having terminals in New York take up promptly the question of pooling docks, car floats, lighters and other facilities for distributing traffic in New York Harbor, including marketing facilities now controlled by individual railroads.

"The director general also requested the Interstate Commerce Commission to have its railroad inspectors make an immediate investigation of conditions existing on all the trunk line railroads in eastern territory, and to submit a report at the earliest possible moment.

"The director general instructed the presidents of the Pennsylvania, Erie, Baltimore & Ohio, Lackawanna, New Jersey Central, and Lehigh Valley railroads to make an immediate study of the terminal facilities on the New Jersey waterfront at Port of New York and to report as quickly as possible what rearrangements of passenger and freight train operations could be made that would increase the efficiency of these terminals."

John Skelton Williams
Comptroller of the Currency

Hale Holden, President
Chicago, Burlington & Quincy

Walker D. Hines, Chairman
Atchison, Topeka & Santa Fe

A. H. Smith
President, New York Central

Mr. McAdoo had spent Saturday in conference with members of the Interstate Commerce Commission and others for the purpose of obtaining exact information as to the situation and the field agents of the commission were ordered to investigate and report immediately on the state of transportation in various parts of the country. Commissioner McChord has been placed in charge of this investigation. Two inspectors were assigned to the freight yards in the vicinity of Washington, where there has recently been a considerable congestion, due largely to delays by consignees in removing their freight.

War Board Resigns

On Monday, December 31, the Railroads' War Board tendered their resignations to the director general in the following letter:

"When you assumed control of the railroads under the President's proclamation of December 26, our function, being one of private initiative, came to an end.

"At our conference with you on Friday morning, last, we offered you the full measure of our co-operation, collectively and individually, in any capacity. You requested us, until further notice, to continue this organization in existence, to hold together our sub-committees and, meanwhile, to advise you on certain specific questions which you put to us. We have responded to all those requests and hold ourselves further at your service. But we venture to invite your attention to the fact that, under the terms of your order No. 1, each of us now has a large individual responsibility for units of the transportation system which we believe demands our closer attention at this moment of supreme effort. We believe further that in such a situation we can best be of the largest aid to you, which it is our earnest purpose to afford, by bringing the organized work of this committee to a close. As we are now acting under your instruction, we respectfully ask your assent before we do this.

"If that shall be your pleasure, we tender you the service of any of our sub-committees which you may find useful in your own organization, as well as all the accumulated information and records of our eight months' study of the problem of co-ordinating the railroads of the United States."

To this letter Mr. McAdoo replied on the same day as follows:

"I have been greatly gratified by your earnest co-operation in the problems which have arisen. The change, however, which has necessarily come by reason of the President's proclamation impels me to believe that you are correct in the views you express. In accordance with your request, I express my assent to your desire to bring the organized work of your committee to a close.

"I propose to designate one of your members as a member pro tempore of my Advisory Committee, and to ask the one so designated to take over until further order the various sub-committees of the American Railway Association's Special Committee on National Defense and the accumulated information and records of your eight months' study of the problem of coordinating the railroads of the United States.

"I wise to express my admiration of the fidelity and effectiveness of your earnest and unselfish application to this great public problem. Cordially yours."

The members of the board who therefore return to their own roads are Fairfax Harrison, president of the Southern; Howard Elliott, chairman of the Northern Pacific; Julius Kruttschnitt, chairman of the Southern Pacific, and Samuel Rea, president of the Pennsylvania.

Mr. Smith's authority was outlined as follows:

"My assistant pro tempore, A. H. Smith, with offices in New York City, is hereby charged with all matters relating to the operation of carriers within my control in what is commonly known as Official Classification Territory and also of the Chesapeake & Ohio Railway, the Norfolk & Western Railway, and the Virginia Railway, and his orders to all such carriers will be issued by my authority. All matters relating to the distribution of cars in freight service will continue under existing law and subject to my further

orders under the direction of the Committee on Car Service of the American Railway Association."

Instructions to Eastern Lines

In pursuance of the order Mr. Smith issued instructions to all eastern lines as follows:

"By order of the Director General of Railroads, Judge Lovett concurring as to priority modifications, please direct every attention to clearing your line of any congestion that exists, wiring me of any condition which is beyond individual control, with suggestions as to most available method of relief.

"You are authorized to disregard priority orders to the extent necessary to clear up a serious congestion, keeping in mind vital necessity for moving food and fuel.

"Wire me particularly where coal is congested without prospect of immediate movement, so that matter of diversion to open lines, or markets, can be arranged with the Fuel Administrator.

"Embargo any consignee who does not release freight promptly on arrival.

"So far as practicable, annul passenger trains which interfere with giving necessary freight service.

"Keep in touch with your connections and afford help to each other in any way possible to further general movement, change routing, short haul freight, and make any mutual arrangements that will facilitate movement and delivery of traffic.

"Call on all employees to lend their efforts in this matter of service to the Government and the people.

"Endeavor to start trains promptly from terminals and load to permit of prompt movement over divisions.

"Advise by wire daily to New York number of cars of freight you have to move above capacity, location of congestion in the order of extent, with prospects of gaining or losing on the situation in the following 24 hours.

"If you have capacity to handle more business on any part of your line, advise between what points and how much, and what you can best handle and dispose of.

"If you are holding freight for connections, give number of cars, loads, or empties, and divide loads into coal, food, Government freight, and other."

General Order No. 2

Mr. McAdoo also issued the following General Order No. 2, addressed to the chief executives of all railroads:

"Pursuant to the authority vested in me by the President of the United States in his proclamation of December 26, 1917, wherein it was stated that, for purposes of accounting, possession and control of the railroads shall date from 12 o'clock midnight on December 31, 1917, you are notified that, until otherwise directed, no changes in the present methods of accounting, as prescribed by the Interstate Commerce Commission, will be required. The accounts of your respective companies shall be closed as of December 31, 1917, and opened as of January 1, 1918, in the same manner as they have heretofore been handled at the close of one fiscal period and the beginning of another, and in the same manner that you should have handled your accounts had the Government not taken possession and control."

The final action of the Railroads' War Board before adjourning sine die was to send the following telegram to the Presidents of all the railroads that have supported the committee:

"The function of the Railroads' War Board under the resolution of April 11 last came to an end with private railroad management. At the request of the Director General of Railroads we have remained here to furnish him with certain information, but that duty being now complete, we have requested and received permission to terminate our activities and return to our individual responsibilities. Mr. Holden has been designated pro tempore a member of the Director General's Advisory Committee to take over until further order the various sub-committees of the American Railway Association's Special Committee on National Defense. We thank you cordially for your support and assistance during the past eight months."

The Effect of the Announcement of the New Plan

The only outward and visible sign of this momentous event in railroad history on December 28 was a strong upward tendency in the market quotations of railroad securities, depressed by weeks of uncertainty as to the future and neglected for Liberty Bonds, but now encouraged by the prospect of a Government guaranty.

Among railroad officers the event produced varying reactions. There was gloom among those who felt that they had been told they had failed to make good, and a feeling of relief on the part of many who realized that a great burden of responsibility for railroad credit had been lifted from their shoulders and that they would be left free to operate the roads with the help of the Government instead of under its restrictions. Mr. McAdoo received hundreds of telegrams of congratulation from railroad executives, bankers and security holders expressing enthusiastic approval of the plan and promises of co-operation. There was also the usual anxious speculation as to how the new boss would act, but a general willingness to co-operate with him to the full.

The New Director-General

William Gibbs McAdoo, who now combines the office of Secretary of the Treasury with that of Director General of Railroads, thus becomes, if he was not before, the most powerful individual in the administration under President Wilson. As Secretary of the Treasury he was in charge of the important function of financing the war and he now is charged with the duty of co-ordinating with the government's financial requirements those of the railroads, which had been necessarily neglected while the government was monopolizing the investment market for its own purposes. This doubtless represents one of the important reasons for Mr. McAdoo's selection and while some surprise has been expressed that two such important offices should have been given to one man, Mr. McAdoo has indicated that he intends to leave the operation of the railways largely in the hands of railroad men.

While Mr. McAdoo has had little experience in steam railroad matters, he was at one time a railroad lawyer in Tennessee, and, without having had previous experience in large business affairs, he made a reputation for himself by his successful financing and execution of the project for building the Hudson river tunnels from New Jersey into New York City. As Secretary of the Treasury he has demonstrated marked executive ability in the handling of the Liberty Loan campaigns and has shown the faculty of enlisting the co-operation and of utilizing the advice of the most experienced leaders in the financial field. By many he is regarded as the ablest man in the Cabinet, and the importance of his office has been greatly increased by the responsibility imposed upon it by the necessity of raising huge loans for the prosecution of the war and for the assistance of our Allies.

Mr. McAdoo was born near Marietta, Ga., on October 31, 1863. He was educated at the University of Tennessee. In May, 1882, he was appointed deputy clerk of the United States Circuit Court for the southern division, eastern district of Tennessee. In 1885 he was admitted to the bar, and he practiced law at Chattanooga, Tenn., until 1892, when he removed to New York. For a number of years, until 1903, he was a partner with William McAdoo in the practice of law at New York. He then engaged, as president and director of the Hudson & Manhattan Railroad, in the work of financing and constructing the Hudson river tunnel system, which completed on March 8, 1904, the

first tunnel under the Hudson river. The first Hudson river tunnels between Hoboken, N. J., and Sixth avenue and Nineteenth street, New York City, were opened for traffic on February 25, 1908, and the fourth tunnel under the river was completed on March 11, 1909. Later Mr. McAdoo became prominently identified with the Democratic political campaign. He was a delegate to the Democratic National Convention at Baltimore in 1912, later vice-chairman of the Democratic National Committee, and he was acting chairman for the greater part of the campaign which resulted in the election of President Wilson. On March 6, 1913, he became Secretary of the Treasury in President Wilson's Cabinet. Mr. McAdoo is also ex-officio member of the Federal Reserve Board, chairman of the Federal Farm Loan Board, and chairman of the United States section of the International High Commission.

Probable Changes Under New Regime

While the important question of the compensation to be guaranteed for the protection of railway security holders remains to be settled by act of Congress, after President Wilson has made his promised recommendations to it in a message, certain important features of the plan under which the railroads are to be operated have been made clear in advance by the terms of the President's proclamation and by Director McAdoo in his order and in his talks to newspaper men. There are many important details, however, which have not yet been settled and will not be until Mr. McAdoo has had time to receive further information and advice and to give them careful consideration.

The railroads will continue to be operated directly by their own officers except and until the director general shall find occasion to order a change. They will be given "a square deal," he has promised, and every opportunity to make good, with such help as the government can give them and under the presumption that they will not be disturbed except for good cause. Of course, the director general's power is paramount, but his authority is superimposed upon that of the existing organizations and not substituted for it. If a railroad president should die or resign, his successor would be elected by the directors in the usual way, subject, of course, to the approval of the director general. On the other hand, if a railroad officer proved recalcitrant he undoubtedly could be dismissed.

Mr. McAdoo intends to conduct his railroad work from his office in the Interstate Commerce building. He realizes that a colossal task has been placed upon him and he does not intend to proceed rashly or to try to revolutionize the railroads at a single stroke. His purpose is to secure the greatest possible efficiency from the use of the existing instrumentalities of the railroads, and he believes that with the individual interests of the railroad companies absolutely submerged by the government guarantee it will be possible to work out many plans for co-ordinating their facilities which have been impracticable for the railroads under the prohibition of the laws and under the pressure of their individual interests.

He has been giving considerable study to the possibilities of common use of tracks and facilities of all kinds and while he has not yet given careful consideration to the recommendation that non-essential freight be barred from transportation he has made it clear that the vital needs of the government for the prompt movement of materials and supplies of all kinds must have right of way over all other traffic and that, if necessary, the non-essentials must give way.

Interstate Commerce Commission to Co-operate

Mr. McAdoo expects to make use of the co-operation of the Interstate Commerce Commission and its staff and will not interfere with its course of procedure in ordinary matters, although, if he considered it necessary, he could overrule any action it should take. There is no reason why the commission should not issue its decision in the supplemental 15 per cent rate case, although if it should decide that the present rates should or should not be advanced and the director thought differently his decision would prevail. Whether rates should be advanced to meet increased expenses now becomes a matter of governmental policy rather than one of justice to the railroads, at least for the time being, because with a guarantee of net operating income the question is whether the government should seek to reduce its obligation under its guarantee by increased collections from shippers or whether any deficit to be met shall be defrayed from taxation.

Government Freight Not to Be Carried Free

Under the guaranty plan all earnings will be virtually pooled, that is, they will be subject to an accounting with the government, and a surplus on one road would be retained practically as a government fund which might be ordered turned over to roads on which it was necessary to make up a deficit. For this reason Mr. McAdoo does not favor the idea that government freight should be carried free, as in England, but prefers to have it accounted for in the usual way so that a proper record may be kept. He has expressed the opinion that the government ought even to pay postage on its own mail, instead of franking it, because under the present system there is no record to show what the free service amounts to.

Judge R. S. Lovett, director of priority, will retain his present office, but it is probable that a government traffic director will be appointed for the purpose of co-ordinating the various government departments and to avoid the indiscriminate use of preference orders. The Commission on Car Service before the taking over of the roads had cancelled its Bulletin No. 22, which provided for the use of preference waybills on government freight, and the order of preference to be given to traffic of this character is now prescribed in Judge Lovett's Priority Order No. 5.

One of Mr. McAdoo's ideas is that a great deal of needless train mileage can be reduced by the removal of any incentive on the part of railroad men to route freight by any except the most direct or most available lines. He believes that there is still some unnecessary duplication of passenger facilities and has made it clear that if any passenger service is found to be unnecessary it will be discontinued, although he does not wish to interfere with necessary travel for business purposes.

The railroads have already reduced passenger service by 28,000,000 train miles a year and the discontinuance of more trains has been announced in the last few days. The Railroads' War Board at its meeting on December 27 gave further consideration to the curtailment of unnecessary passenger traffic, urging upon a number of railway executives who were present the elimination of all merely luxurious service. Particular attention is being given to the western situation. The representatives of the southern lines advised that their special trains to Florida would not be advertised at this time and that they would arrange for the cancellation of tariffs covering the movement of private passenger cars. The eastern trunk lines, at the request of the War Board, have already obtained permission of the Interstate Commerce Commission to take out their tariffs providing for the use of private cars, on three days' notice, effective January 1.

President Wilson's announcement that he would recommend a guarantee of the average net operating income for the past three years has aroused much speculation as to the probable attitude of Congress toward it, as it will be called upon to pass the necessary legislation. In general, most of the members of Congress that have been quoted have ex-

pressed their hearty approval of the plan. There has been some expression of opinion that the guarantee proposed by the President is too liberal and there may be a prolonged contest over the question, but the general feeling in Washington is that Congress will adopt the President's recommendations.

A few, particularly among the Republicans, have already expressed doubts as to the wisdom or the necessity of taking over the railroads, but the President's action has placed that subject in the category of academic questions It is likely, however, that the Republicans will make an issue of an idea of extending the plan to government ownership.

The average net operating income for three years will undoubtedly work out more favorably for some companies than for others, particularly for such roads as have had only one good year out of the three instead of two out of the three, which has been the general experience. The proclamation provides, however, that nothing shall be done under it to impair the rights of stockholders and other interests in the properties to receive "just and adequate compensation" and it has been suggested that this is intended to provide for unusual cases.

The Wage Question

One of the important problems soon to be faced by the railroad director is that of the wages of employees. The executive officers and legislative agents of the four brotherhoods of train service employees held a conference with the President at the White House on December 27 and afterward expressed to the newspapers their hearty approval of the plan of government control. It was given out that they had asked for the appointment with the President and it was generally supposed that they had promised their support and also laid further foundations for the consideration of their demand for higher wages. The Railroads' War Board some time ago had placed the interests of the railroads in the matter unreservedly in the hands of the President. On December 29 it formally declined the demands and thereby placed the responsibility for dealing with the wage question in the hands of the government, but it is understood that the brotherhoods will not press their demands for the present until some of the fundamental features of the new arrangement have been settled.

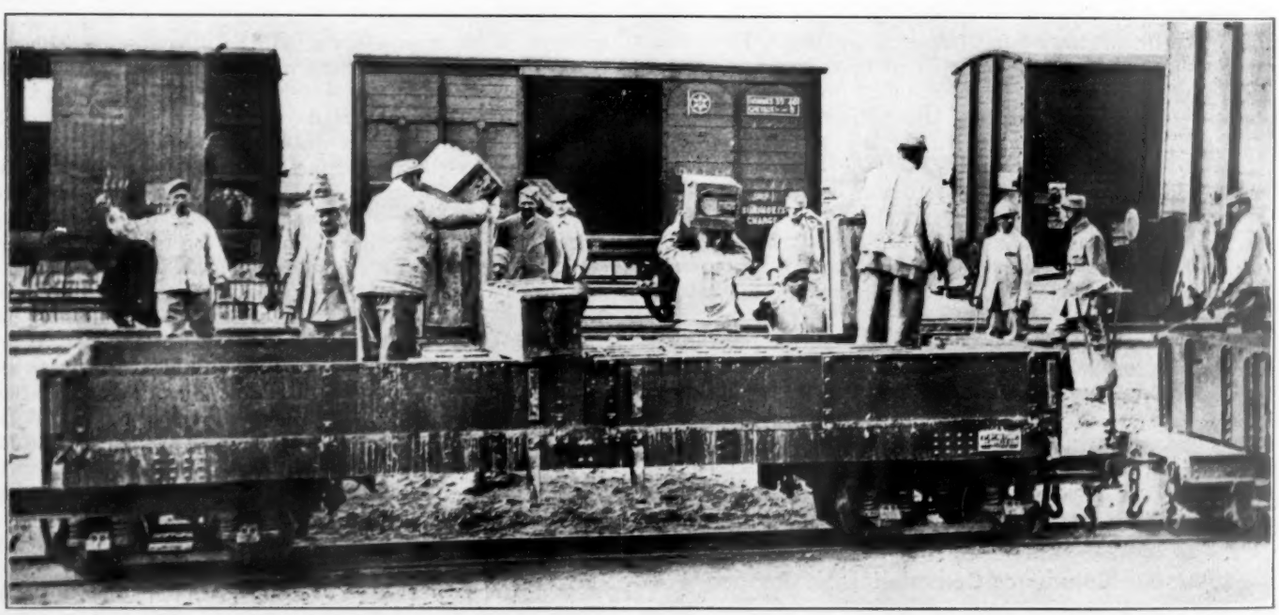
It was announced that Mr. McAdoo would meet the representatives of the brotherhoods to discuss the situation on Thursday.

For the purpose of improving the New England coal situation Mr. McAdoo has taken up with the Shipping Board the plan of putting some additional boats into service to replace those that were taken away earlier in the year, thereby increasing the burden of the railroads.

Before its dissolution the Railroads' War Board had addressed a telegram to its group chairmen suggesting that immediate study be given to the construction of convenient interchange tracks to link together heretofore competing terminals in all important cities; also to the rerouting of traffic which had formerly been competitive to accomplish the most expeditious switching deliveries.

Director McAdoo and his staff were busy all day Tuesday, New Year's day, in efforts to clear up the congestion of freight, especially in the eastern states. Mr. McAdoo recommended, and Judge Lovett took the necessary action, to have all existing priority orders suspended. Particular attention was paid to the desperate situation of New York City in the scarcity of coal for dwellings and offices, as well as for factories, and Mr. McAdoo ordered that coal, and also other freight, be sent through the Pennsylvania tunnels to the fullest extent practicable. These tunnels, hitherto used only for passenger traffic, afford a direct rail route from New Jersey terminals to the borough of Queens, and the movement of coal by this route is expected, under the present difficulties incident to extreme cold water and ice in the river and bay, to save several days' time in the movement of coal to Queens and Brooklyn; and also to parts of Manhattan. The Sunnyside yard, at the eastern end of the Pennsylvania tunnels, is adjacent to the Sixtieth street bridge leading to Manhattan.

It is expected that President Wilson will go before Congress today (Friday) with his recommendations for such legislation as may be necessary to carry out the purposes stated in his proclamation taking possession of the railroads of the country.



French Official Photograph. International Film Service

Bringing Up Cases of Shells on a Light Railway Behind the French Lines

Editorials—Annual Statistical Number

The New Government Control of Railroad Management

THE RAILWAYS of the United States enter the year 1918 under conditions wholly different from those under which they entered any earlier year. They are handling the heaviest traffic ever known. They are serving the government as an instrumentality in carrying on the greatest war ever waged; and they are being operated under direct government control. At noon on December 28 William Gibbs McAdoo, Secretary of the Treasury, in accordance with a proclamation issued by President Wilson two days before, assumed the authority and entered upon the duties of Director-General of Railroads.

Our Civil War was one of the most terrible conflicts in history. When it occurred this country had 36,000 miles of railway. In the four years it was in progress the government took control of only 2,100 miles, or less than 6 per cent of the total mileage. Our country has been engaged in the present war only nine months. Except for the financial assistance given to its allies and the supplies of food and munitions, the effects of its participation thus far have been almost negligible; yet already it has taken control of the operation of 100 per cent of the railways.

This action by the government raises three important questions: First, what is its immediate significance? Second, what will be its financial effects? Third, what will be its effects on the efficiency of operation of the railways during the war?

1. The Significance of the Step Taken.

The step taken by President Wilson is strictly and solely a war measure. It has been interpreted by advocates of government ownership as a long move in the direction of the adoption of that policy. The President does not regard or intend it as such. He is understood on principle to be opposed to government ownership. Furthermore, as we pointed out in an editorial last week, the step is not due to any avoidable shortcomings of the managements of the railroads. President Wilson made this as clear as possible in the statement which he issued in announcing his plan.

"The committee of railway executives who have been cooperating with the government in this all important matter," he said, "have done the utmost that it was possible for them to do, have done it with patriotic zeal and with great ability; but there were difficulties that they could neither escape nor neutralize." He added, "Complete unity of administration in the present circumstances involves upon occasion and at many points a serious dislocation of earnings, and the committee was, of course, without power or authority to rearrange charges or effect proper compensations and adjustments of earnings. Several roads which were willingly and with admirable public spirit accepting the orders of the committee have already suffered from these circumstances and should not be required to suffer further. In mere fairness to them the full authority of the government must be substituted."

Immediately on the entrance of the United States into the war the railways voluntarily organized themselves to serve the government and the public patriotically, efficiently and regardless of their individual interests. No more unreserved statement that they did what they undertook could be made than is contained in the sentences just quoted from President Wilson. And yet the President decided that in the interests of the highest railway efficiency the government must take control.

Why did he so decide? He clearly indicated the reason. There were difficulties, he said, that the Railroads' War Board could neither escape nor neutralize. He mentioned the most formidable of these difficulties, and everyone he mentioned was a difficulty which government regulation had raised, and which, even in the crisis created by the greatest war in history, government regulation had not removed. Government regulation having tied a Gordian knot the railway managements could not untie, the President decided that it must be cut by appointing a Director-General of Railroads, who, it was assumed, could succeed because he could disregard the restrictions which government regulation imposed.

We do not imply, in putting this interpretation on President Wilson's words and act, that government regulation was wrong and undesirable. What we do say is that it was wrong, in the emergency created by the war, for Congress to fail at its last session to remove, when it was expressly asked to, the restrictions on the railways which the Sherman law and the anti-pooling law imposed; that it has been wrong for the Interstate Commerce Commission and the state commissions persistently to refuse over a long period of years to let the railways earn enough money adequately to develop their facilities; that it has been wrong for the government departments to make a flagrant abuse of freight preference orders; and that these are the things which have precipitated government control of the railways. If those who have regulated the railways had had the intelligence and courage to do their plain duty the Railroads' War Board and the managements of the individual railways would have been able to deal with entire success with the conditions created by the war. If Congress, at its present session, would have acted on the recommendations made by the Interstate Commerce Commission in its special report of December 5, and suspended the Sherman anti-trust law and the anti-pooling law, and given the support of the government to the credit of the railways there would have been absolutely no occasion for the appointment of a Director-General of Railroads. The Railroads' War Board could then have directed the operation of the railroads more efficiently than it is likely to be directed under the plan which has been adopted.

2. The Financial Part of the Plan.

While, however, the wisdom and necessity of the control which has been taken by the government are open to the gravest question, it must be said that the plan of control which President Wilson has formulated is as good as could be adopted, if any was to be adopted. The outstanding feature of the financial part of the plan is that it contemplates guaranteeing to each railway net operating income equal to the average which it earned in the three years ending on June 30, 1917. It is surprising to find that some people object to this on the ground that it would give the railways too much. They seem to think that such relatively large gross and net earnings as were made during the two years ending on June 30, 1917, have prevailed for some years. On the contrary, the fiscal year ended on June 30, 1915, was the worst year financially the railways have had since 1899, and in the fall of 1915 there were more miles of railway in the hands of receivers than ever before. The following table gives the investment in road and equipment, the operating income and the percentage of operating income on invest-

ment in road and equipment, in the three years ended June 30, 1917:

	Investment in road and equipment		Operating income (net)		Per cent operating income on investment in road and equipment
	Total	Per mile	Total	Per mile	
1915..	$17,247,101,881	$72,689	$728,212,079	$2,972	4.09
1916..	17,525,576,908	73,209	1,043,839,822	4,247	5.80
1917..	.....	74,000	1,050,000,000	4,237	5.72
Average per year...		73,299	940,683,967	3,819	5.20

The figures in this table for the years 1915 and 1916 are from the annual report of the Interstate Commerce Commission for 1917. The figures for the year ended June 30, 1917, are estimates made by the Bureau of Railway Economics. The Interstate Commerce Commission in its annual report estimates the percentage of return earned in the year ended June 30, 1917, at 6½ per cent. This is clearly too high. The Interstate Commerce Commission originally estimated the returns for the fiscal year 1916 at 6.35, while the Bureau of Railway Economics estimated it at 5.9, and the final figure of the Commission itself is only 5.8 per cent. The Commission's estimate for 1917 is too high for the same reason that its original estimate for 1916 was, namely, that it does not make allowance for certain factors which will finally have to be included.

Our estimate of the average return on investment in road and equipment earned by the railways in the three years ended June 30, 1917, is 5.2 per cent. This is almost exactly the same as the average earned in the ten years 1901-1910, which was 5.19 per cent. It is true that it is more than was earned in the five years ending with 1915, which was 4.54 per cent; but this was the worst five years the railways have had since the depression following the panic of 1893, and it can hardly be regarded as affording a fair basis of compensation.

Speaking in actual figures instead of in percentages, the basis suggested would give the railways as a whole an operating income of about $941,000,000 a year. This would be $102,000,000 less than their operating income in 1916 and $109,000,000 less than their operating income in 1917. It is no evidence of fairness for anybody to contend that a basis which would give the railways over $100,000,000 a year less than their average operating income of the last two years, and would yield them less than 5¼ per cent on the investment in their road and equipment, is unduly favorable to the railways. The opposite contention could be made with much more force.

It is true the prices of railway securities advanced when the President's plan was announced, but this was because investors in railway securities knew that the return earned by the railways was declining; because they were in great uncertainty as to how far this decline would go; and because they felt that the President's recommendation tended to remove this uncertainty. The owners of railway securities would, of course, rather have the return earned in 1916 or 1917 than the one the President proposes to guarantee, but they recently have been filled with dread lest their return would soon be back where it was in 1914 and 1915.

While, as applied to the railways as a whole, the financial plan of the President is as favorable to the railways as could reasonably be expected, it would do great injustice to some individual companies. There are, for example, several roads which became bankrupt in 1915, and which had only partially recovered in 1916, but which have got on fairly solid ground in 1917. Such cases, which are exceptional, will require special consideration and treatment, and the plan of the President is broad enough to permit this. The adoption of the President's plan probably would stabilize railway securities during the war and make it practicable for most large railways, with the backing of the government, to raise the capital required to enlarge their facilities. Unfortunately the recommendations of the President do not solve the financial problem. They must, before a solution is reached, be acted on by Congress. There seems no good reason, however, for doubting that after some discussion the President's plan as a whole will be adopted. The objection that it would give the railways too much is based on a misunderstanding which discussion will soon remove.

3. Effects of the Plan on Railroad Efficiency.

In assuming control of the operation of the railways Mr. McAdoo will have some disadvantages which the Railroads' War Board has not had, but he will also have some great advantages it has not had.

As to his selection for director-general, it may be said without hesitation that once the President had decided to choose a man from his own official family he made the best choice available. With one possible exception, Mr. McAdoo is the ablest man in the Cabinet. He first demonstrated his ability by financing and constructing the Hudson and Manhattan tunnel when to most men who were considered competent judges the undertaking, especially by one almost unknown in the fields of finance and railroad construction, seemed like the "baseless fabric of a vision." When he was appointed Secretary of the Treasury he had had little experience with such affairs as it is concerned with, and there was no reason to assume he would have any weightier problems to solve than have been solved by his various predecessors since the Civil War. As things have turned out, he has had the hardest work to do and the most prodigious problems to solve that have ever been presented to any incumbent of his office, and no higher tribute to him could be paid than to say—and it can be said truly—that he has at all times proved equal to the situation. He has put the Federal Reserve System on a sound basis, and he has raised all the huge sums required for making large loans to our allies and for financing the requirements of our government in the war. Either his achievement in putting the Federal Reserve System on a successful working basis, or his achievement in raising funds for the war, would be enough to stamp him as an administrator of a high order. The railways and the nation may well congratulate themselves that when President Wilson decided to take over the railways, he appointed as director-general one of the very few first-class men in his administration.

One of Mr. McAdoo's disadvantages as director-general will be that he will have many other duties to perform. He retains the secretaryship of the treasury and three or four other important government offices. What effect his retention of these other offices will have on his direction of the railways will depend greatly on how he goes about the latter task. Few minds seem to be able to grasp the colossal magnitude of the railroad system of the United States and the consequent colossal magnitude of the work of operating it as a single system. The railways of the United States have a mileage of 260,000 miles, or about 40,000 miles more than all the railways of Europe. They have an army of one and three-quarter millions of employees. They cover an area almost equal to that of Europe. They handle more freight traffic than all the railways of Europe. No man who ever lived or who ever will live could direct the operation of this railway system in the same sense that the President of a railway system of 5,000 or 10,000 miles directs its operation. Indeed, very few men can be said ever to have measured up fully to the task of managing 10,000 miles of railroad, and those who have done so have always owed it to the fact that they have shown extraordinary capacity, first, for choosing able lieutenants, and, second, for giving their lieutenants a free hand in working out their problems. Even then the number of great problems which has come up to even the ablest presidents of large systems have been so numerous that in most cases they have been able to stand the strain only a few years.

It ought to be evident that if Mr. McAdoo is to continue to hold other important government offices and at the same time direct the operations of a railway system equal to 26 systems of 10,000 miles, he must leave operation almost entirely in the hands of the present heads of the railways or he will make a gigantic failure of the entire undertaking.

Unfortunately, there is some uneasiness at present as to just what policy he intends to pursue. The Railroads' War Board was voluntarily created by the heads of the railways to direct and co-ordinate the operation of all lines during the war. It is generally conceded by those familiar with its work that it has done it as well as the restrictions imposed by government regulation would permit. This has been recognized by railway officers, by shippers, by the Interstate Commerce Commission and by President Wilson. Not a single definite suggestion for the improvement of transportation conditions has yet come from any government source which had not already been made by the Railroads' War Board and which would not have been carried out by the War Board if restrictive laws would have permitted.

But while Mr. McAdoo asked the advice of the War Board on several matters, it very soon became evident that he did not intend to use it as a medium through which to exercise his authority, and, therefore, before any friction or feeling had a chance to develop, the members of the board sent him their resignations. Mr. McAdoo indicated that he desired to avail himself of the excellent organization, ramifying throughout the country, which the War Board had built up, and it is therefore being maintained, with President Holden of the Burlington, a member of the War Board, in charge of it.

There has been a great deal of loose talk in the newspapers regarding wholesale reductions in salaries of the higher officers of the railways. There probably is no other feature of railway management which gives rise to so much unadulterated buncombe as the salaries of the higher officers. The total earnings of the Class I railways (those earning over $1,000,000 each) in the fiscal year 1916, were $3,382,000,000 and their total operating expenses were $2,211,000,000. These railways had 17,057 general and division officers and the total salaries paid to all of them amounted to $51,500,000, an average of $3,001.64; that is, the total salaries paid officers were 1.52 per cent of total earnings and 2.32 per cent of total operating expenses. If, therefore, the salaries of all these officers were reduced 50 per cent the saving in operating expenses would be 1.16 per cent, and if all of them were abolished the saving in operating expenses would be 2.32 per cent. There are only about 50 railways having a mileage exceeding 1,000 miles, and only in these are there paid any salaries which, by any stretch of the imagination, could be called "fancy."

The total saving that could be made by reducing the salaries of the higher officers of railways would be so small relatively to total operating expenses that as a measure of economy it would be silly. But it would be ineffective. It would exasperate and depress, and thereby reduce the efficiency of a small body of men whose highest efficiency is at present vital to the efficiency of every large railroad in this country. It would also reduce the efficiency of all officers who are in line for promotion to higher positions by making them less ambitious to secure advancement. The effects in reduced efficiency would be felt clear down to the bottom of the rank and file, for the efficiency of any large body of men depends mainly on its direction and leadership.

Probably the greatest disadvantage under which Mr. McAdoo is going to labor, at first, at least, is a sense of uncertainty and uneasiness which prevails among railway officers, largely as a result of loose talk such as that referred to. The *Railway Age* is able to say, however, upon high authority, that the talk of reductions of railway salaries and other such charges, did not originate with Mr. McAdoo and has been discountenanced by him. He has expressly indicated that he has no plan for reducing salaries or for making radical changes in the present organizations, and in the first paragraph of his second order to the railways he said: "All officers, agents and employees of transportation systems may continue in the performance of the present regular duties, reporting to the same officers as heretofore and on the same terms of employment." His plan is merely to superimpose upon the present organizations such organization representing the government as he may deem necessary to give full effect to the authority which President Wilson has conferred on him. Up to the present time, Mr. McAdoo has shown a disposition to seek counsel not only from members of the Interstate Commerce Commission, but from the leaders of the railroad industry; to try to carry out both the plans which the Railroads' War Board already had adopted and the plans for improving efficiency which railroad men had advocated, but could not adopt because of legal obstacles; and to leave to each railroad organization as large a measure of autonomy as is consistent with the operation of all the railways as a single co-ordinated system.

His disposition to avail himself of the ability and experience of railway officers is indicated by his appointments of President Holden of the Burlington, President Smith of the New York Central, Chairman Walters, of the Atlantic Coast Line, and Chairman Hines and Vice-president Chambers of the Santa Fe to important places in his temporary organization.

It may be said that to imply that railway men may temporarily work less energetically and efficiently under government control than they have under the direction of the Railroads' War Board is a reflection on their patriotism. But they had just as much reason to be patriotic and were just as patriotic before the government took control as since. In addition they had the stimulus of feeling that they were acting without any form of government compulsion, and of believing that they would get credit for so doing, and that the result would be to create a public opinion which would bring about better relations between the railways and the public. The adoption of government control will destroy these incentives unless Mr. McAdoo and the Administration adopt some means of keeping them alive.

The greatest advantage—and it is a very important advantage, indeed—which Mr. McAdoo will have over the Railroads' War Board in directing the operation of the railways will consist in his opportunity to act without any of those numerous restrictions which the national and state governments, by legislation and orders of the commissions, imposed on the private managements of the railways. Neither the Sherman anti-trust law, nor the anti-pooling law, nor the law giving the shipper power to route his freight, nor the requirements of the interstate and state commissions regarding minimum carload weights, nor state laws prescribing the number of men that shall be employed in train crews, need be regarded by him. He does not have to think of the financial effect of diverting traffic from one railway to another, since the net return of each railway is to be guaranteed, and he can therefore cause all traffic to be routed over the less congested lines and through the most open gateways. He can get additional locomotives and cars which the railways themselves have been unable to get, because no governmental authority can prevent him from getting them as government authority has prevented the railways. There is nothing he can do, except that he can discharge railway officers or employees, which the Railroads' War Board could not and would not have done if the law-made restrictions by which it was hedged about had been removed, but at the same time there is nothing which the War Board could have done in the absence of these restrictions which he cannot do.

There is no question that if the government had seen fit to give the Railroads' War Board the same opportunity to deal

with the situation that it is giving to Mr. McAdoo the War Board could have and would have increased even more than it has the efficiency with which the railways are operated. The one thing most essential to Mr. McAdoo's success is to enlist and keep something the Railroads' War Board has had, and that is the loyal support of the railway officers of the country. In view of the wisdom, the ability, the energy and the courage which he has shown in other fields, we believe Mr. McAdoo will succeed in doing this, first, because we believe railway officers are a unit in really wanting to support him, and, second, because we believe he will demonstrate that he deserves their support.

The experiment in railroad control which the government is making would be a gigantic and a most important one at any time. It is vitally important at present. The welfare of the nation imperatively demands that it shall succeed; it must be made to succeed; and it is the duty of every man in any way concerned with it to devote his utmost ability and energy to the task of making it succeed.

Effects of Unwise Regulation Illustrated by 1917 Statistics

JUST ABOUT TEN YEARS AGO the national and state governments began effectively to apply a system of railroad regulation which prevailed until noon on Friday, December 28. On this date the order as to both railroad regulation and railroad management which had lasted ten years passed away. A Director General of Railroads took charge, under whose yoke have been compelled to pass not only the railway managers, but also all the national and state regulating bodies.

Comparisons of the conditions which existed at the beginning and at the end of this ten years of regulation are not only interesting but very significant.

In the year 1907 there were built in the United States 5,212 miles of railroad; in the year 1917, as statistics published elsewhere in this issue, show there were built only 979 miles. While there were actually torn up 451 miles, operation was abandoned on 491 miles more, and the owners of 396 miles more asked permission from state authorities to abandon it.

In 1907 the railways ordered 151,711 freight cars. In 1917 they ordered only 79,367.

In 1907 they ordered 3,482 locomotives; in 1917 only 2,704.

It may be said that the condition of arrested development exhibited by the railways in 1917, as shown by the statistics gathered by the *Railway Age* and given elsewhere in this issue, was due to the war. Let us then compare the last three years of the period ending with 1907 with the last three of the period ending with 1917.

In the ten years from 1897 to 1907 the freight handled by the railways increased 150 per cent; and at the end of that period the development of their facilities was proceeding rapidly. Then began the period of regulation. In October, 1907, came the "rich man's panic"—so-called, perhaps, because the course of events during several months previous had thrown rich men into a panic.

The period of active railroad development only briefly overlapped the period of railroad regulation. The increase in traffic, as we have seen, was relatively greater in the ten years from 1897 to 1907 than in the ten years from 1907 to 1917. There were congestions and delays to traffic in the years at the end of the former period, but they were relatively no more serious than those which have occurred recently, and until toward the end of 1907 the railway companies were engaged in providing the remedy for these conditions in the form of increased facilities.

During the last three years, on the other hand, the railway companies have not been providing the remedy for similar conditions. The number of miles of line built and of locomotives and freight cars ordered in the two three-year periods 1905-7 and 1915-17 are given in the accompanying table. The number of miles of new line built in the three years ending with 1917 was 80.2 per cent less than in the three years ending with 1907. The number of freight cars ordered was 55.8 per cent less. The number of locomotives ordered was 53.1 per cent less.

Is it any wonder in view of such facts that recently the facilities have proved unequal to the demands upon them?

The latter half of 1915 and the years 1916 and 1917, like the years 1905, 1906 and 1907, were periods of large gross and net earnings as compared with previous years. Why, then, were there not large increases in railway facilities in the three years ending with 1917, as there were in the three years ending with 1907? Chiefly because railway regulation had destroyed the confidence of investors in the railroad business. After the United States entered the war in April, 1917, of course, the amount of equipment which the railroads could buy was limited by government priority orders; but the time during which this country has been at war covers only nine out of the thirty-six months which ended on December 31.

The final effect of the kind of regulation to which the railways have been subjected for over ten years has been to cause President Wilson to decide that in order to enable them to be operated with maximum efficiency during the war the government must take direct control of their management.

This being the record of the railroad regulation which prevailed from 1906 to 1917, no effort should be spared to make sure that we shall never return to it, with all its stupidities, its vexations and its disastrous effects. Perhaps we can never return to the management of railways by individual companies, such as formerly prevailed, without also returning to the kind of regulation we have had. If so, then let us frankly recognize the fact and act accordingly. If to get a better system of government regulation or control it is necessary to change our system of railroad ownership and management, let us proceed with the changes in ownership and management necessary to secure needed changes in regulation.

"The old order changeth, yielding place to new,
And God fulfills himself in many ways."

It is easy to hope and to expect that this new experiment of government control which we are beginning will have better results than those of the ten years' experiment of government regulation. The Director General of Railroads is free from all those trammels which government has imposed upon the managers of the railways. He can route traffic any way he pleases. He does not have to take orders from state legislatures as to how many men he shall employ in a train crew. He can reduce service as much as he thinks desirable. He can reduce as much as he likes the time given shippers to unload their freight and he can raise freight and passenger rates as high as he pleases. He can control the use of freight preference orders by government representatives. If, unlike most of the regulating authorities, he acts wisely and fairly he can get the loyal support of railway officers. With the country at war and a government officer in charge, the public will demand less of the roads and be more patient with their shortcomings.

We are obviously in a period of transition. Perhaps the new system of war control will be the means by which the ground will be cleared of a vast accumulation of rubbish so that a new constructive railroad policy can be built upon it. One thing, however, we must never forget or let the public forget, and that is that unwise and inefficient railroad regulation and not unwise and inefficient railroad management produced existing conditions. In view of these conditions

anybody who can find in them an argument for government ownership after the war is addle-pated, indeed.

NEW MILEAGE BUILT AND EQUIPMENT ORDERED, 1905-1907, INCLUSIVE, AND 1915-1917, INCLUSIVE

New Railroad Mileage Built

				Percentage decrease
1905	4,388	1915	933	
1906	5,623	1916	1,098	
1907	5,212	1917	979	
Total three years	15,223	Total three years	3,010	80.2 per cent

Freight Cars Ordered

				Percentage decrease
1905	341,315	1915	109,792	
1906	310,315	1916	165,324	
1907	151,711	1917	79,367	
Total three years	803,341	Total three years	354,483	55.8 per cent

Locomotives Ordered

				Percentage decrease
1905	6,265	1915	1,612	
1906	5,642	1916	2,891	
1907	3,482	1917	2,704	
Total three years	15,389	Total three years	7,207	53.1 per cent

The Locomotive Situation

WHEN THE EXTRAORDINARY CONDITIONS of the locomotive market, both as to prices and deliveries, existing during the greater part of this year are considered, there is nothing unexpected in a falling off in the number of orders placed for locomotives for domestic use during 1917 as compared with 1916. The significance of this reduction so far as it applies to the railroads, however, is more apparent than real. The reduction has taken place largely in the number of locomotives ordered for industrial use and the lighter types for railroad service. There is an actual increase in the number of locomotives of several of the heavier types for which orders have been placed. The falling off of available tractive effort is, therefore, much less real than the figures for the total number of locomotives ordered would indicate.

During 1916 orders were placed for 761 locomotives of the 2-8-2 type. During the past year about 830 of these engines were ordered. There is also a slight increase in the number of 2-10-2 type and Pacific type ordered, while orders for Mallet type locomotives decreased from 220 last year to considerably less than 200 during 1917. It is evident, both from the number and the distribution of the orders for the Mikado type, that this is the leading type for road freight service, while the 2-10-2 type is the most general choice where more hauling capacity is desired than can be obtained with the Mikado type.

A comparison of the number of Mallet locomotives being ordered today with the number which were placed in service six or seven years ago, might lead to the inference that the Mallet locomotive is discredited as a road unit, and that its usefulness is confined to certain special operating conditions only. But the facts hardly justify such an inference. There are a number of railroads on which the requirements for heavy freight service are consistently being met by the use of Mallet locomotives, in some cases to the exclusion of the consideration of the 2-10-2 type.

Much of the early experience with Mallet locomotives was unfortunate. This type, when introduced into America, was a decided innovation under our conditions of maintenance and operation. It is not at all surprising, therefore, that its use was not always highly successful at the outset. One of the greatest difficulties, and probably the one which now most frequently eliminates it from consideration, was the high cost of maintenance. The more recently built of these locomotives are operating in road service and offering no difficulty in maintenance, and it is doubtful whether the prejudice generally entertained against the type, based on experience with the earlier designs, is justified under present conditions.

Two noteworthy developments in the locomotive field mark the past year. One of these is found in a Decapod type locomotive with cylinders designed to work with a maximum cut-off of 50 per cent, built by the Pennsylvania Railroad.* The other is the first practical development of locomotive feedwater heating in America.

The use of a maximum cut-off of approximately 50 per cent eliminates the range of cut-offs within which the water rate of the cylinders is excessive and thereby makes possible an increase in the ratio of cylinder power to boiler capacity. The working cut-offs then range from 50 per cent to 25 per cent, instead of from about 85 per cent to 25 per cent as in the case of the usual type of cylinders, a range within which there is little variation in the water rate. The advantage of the arrangement, therefore, lies largely at slow speeds and gradually decreases as the cut-off in cylinders of the usual type is decreased with increasing speed. This advantage must be paid for by an increase in the size of rods, pins, axles, etc., to withstand the greater maximum stresses imposed by the increased initial piston load required to produce a given mean effective piston load. Undoubtedly this is a disadvantage and the general adoption of the idea must depend upon a careful weighing of this disadvantage against the undoubted advantages as to steam consumption and power capacity which such cylinders possess. The answer to this question arrived at by the Pennsylvania is found in the fact that orders for 122 locomotives of this type were placed during the year, after thoroughly trying out the test locomotive.

The feedwater heater belongs to the constantly increasing class of economy and capacity increasing devices for application to the locomotive. Its development has come at a time when unprecedented conditions have directed the attention of the nation as a whole to the problem of fuel conservation as never before in the history of the country. Tests have shown that the feedwater heater conservatively may be expected to effect a fuel saving of about 10 per cent. Under present conditions, both the severe shortage of power and the high cost and shortage of fuel have materially increased the economic importance of any device or development capable of effecting a reduction in fuel consumption of this magnitude.

Practically all of the so-called capacity increasing devices effect the increase in capacity by an increase in economy. Conditions have been such in the past, however, that the greatest stress has been laid upon their ability to increase capacity. Conversions of existing locomotives have largely been made on that basis. The fuel situation, however, is rapidly becoming such that improvements in existing locomotives which might not be justified from the standpoint of increased capacity, may be fully justified by the resulting decrease in fuel consumption.

Since the United States entered the world war the attention of the railroads has been focused upon the necessity of moving an unprecedented amount of traffic with existing equipment, little hope being held out as to the possibility of relieving the situation with a supply of new equipment. Conditions now existing indicate that the needs of the railroads for new power will receive much more attention during the coming months than they have received during the past year. The need for the additional power is urgent, especially in certain congested districts. To effect the quickest results in increasing the number of locomotives in service, the building of standard locomotives of several types for delivery to the railroad or railroads most in need of them at the time they are completed, is worthy of the most careful consideration. Undoubtedly many difficulties, such as clearance limitations and the wide variations in operating conditions on different roads, might result from a too rigid adherence to such a plan. Within practicable limitations, however, it offers a means of greatly expediting the turning out of locomotives from the plants of the builders. It can, of course, be justified only as a war measure.

*See the *Railway Age Gazette*, June 15, 1917, page 1241.

The effect of such a plan upon deliveries is amply demonstrated by the results obtained by the United States government in securing locomotives for use in France. Its disadvantages, from the standpoint of the interests of the individual railroads, would be no greater than those now being suffered through the transfer of existing locomotives from one railroad to another on which traffic is more congested. Whether or not such a plan proves to be wholly feasible, it can be adopted to the extent of holding in abeyance all plans for the building of locomotives of new designs, none of which have ever previously been built. Let the builders work to existing designs and deliveries will be expedited.

Construction Activities in 1917

A RECORD of three consecutive years in which railway extensions averaged only 1,000 miles of new line per year, or less by nearly 40 per cent than in any other three consecutive years since the Civil War, would indicate a condition of distress under any circumstances, but occurring during a period of most remarkable industrial and commercial expansion it is irreconcilable evidence of the sore straits in which the railways find themselves. To contradict the suggestion that the network of railroads has become so comprehensive over the country as to make further extensions unnecessary, attention is called to the fact that a single railway, the Santa Fe, has undertaken 300 miles of extensions in a single year, some of which was started after our entrance into the war to meet the demands for transportation facilities from communities now without them.

Granting that intensive development is more necessary at the present time than expansive growth, attention need only be called to the contrast between additions to second track during the past three years as compared to the preceding three to show that the same restrictive condition prevails. During 1915, 1916 and 1917 only 1,282 miles of second track was added, as compared with 2,901 miles added during 1912, 1913 and 1914.

In the case of terminals we find that work on very few classification yards of first magnitude or extensive belt line projects has been undertaken in the past three years. Activities in terminal work have been directed largely to numerous small improvements made in efforts to relieve conditions of congestion in the shortest possible time and with relatively minor expenditures. It must be said in justice that this policy on the part of the railroads is not entirely a result of limited funds. The labor shortage extending over the past two years and the enormous increase in the costs of both material and labor with a consequent enormous increase in the obligations incurred in any improvements at this time are partly responsible. The change in policy introduced by our own entrance into the War with the enforced need of curtailing the use of men and materials has had an even more marked effect.

In pursuance of this policy municipal and state authorities have generally taken a broad stand in regard to grade separation, passenger station and other projects having no direct bearing on the expeditious movement of traffic, recognizing that the times demand the postponement of work unnecessary to the prosecution of the War. A striking exception to this rule is the demand of the United States War Department for the raising of river bridges at Pittsburgh, in connection with which the Pennsylvania Lines are making an expenditure of nearly $1,000,000.

The public has taken a less favorable attitude in regard to a number of railway improvements sorely needed to relieve congestion, and has in several instances evinced an almost childish obstinacy in blocking the projects. Among these may be cited the New York Central's proposal to spend $100,000,000 for improvements on Manhattan Island and the plan for a new bridge across the Hudson below Albany to be used in connection with a belt line to reduce congestion through that city. In Chicago, the Atchison, Topeka & Santa Fe and the Illinois Central have been unable to proceed with important improvements because of what appears to be a definite policy of insisting on wholesale electrification in all cases where the railways are compelled to negotiate with the city.

While it has been necessary to display careful judgment in improvement budgets during the years past it will be necessary to exercise even greater discrimination in deciding upon the construction work to be done during the coming year. Unquestionably the government administration of the railroads will exercise some bearing on this matter but a more marked influence will be felt through the designation of priority on the necessary materials. The shortage of labor will also act as even more of a deterrent than in the past and unquestionably constitutes the most formidable obstacle confronting the railways at the present time in the completion of the additions and betterments to their properties so necessary to the expeditious handling of the war traffic.

A Review of Maintenance Conditions

THE YEAR WHICH HAS JUST CLOSED has been without precedent in the maintenance of way department as in other branches of railway service and in industrial activities in general. Not the least unusual has been the fact that the roads were unable to spend all of the money available for the upkeep of their properties, or which should have been expended. As a result a large amount of deferred maintenance has accumulated and the net earnings of the roads have been swelled by these unexpended portions of maintenance, appropriations the equivalent of which will have to be returned to the physical properties with liberal interest at no late date if their efficiency is not to be impaired.

The past year has been one of unprecedented traffic, the gross earnings being estimated to be over $450,000,000 greater than in the preceding year. For the first time in history the gross earnings of the railways of the United States passed the $4,000,000,000 mark. This heavy traffic has exacted its toll from the track and structures through the added wear and tear which must be made good if the property is not to be allowed to deteriorate. The statistics of the Bureau of Railway Economics for the first ten months of 1917 show an increase in total operating revenues of 11.8 per cent per mile of line as compared with the same months of 1916. For the same period expenditures for maintenance of way and structures showed an increase of 6.1 per cent. On its face this comparison is not unsatisfactory, for an increase in the amount of business handled should not lead to a corresponding rise in the cost of maintaining the property since a considerable part of the charges are independent of the traffic and others are only partially affected by it.

The difficulty arises from the changing conditions which have affected the factors involved in these comparisons during the past year. The rates received for transportation have been practically stationary during the two periods compared; therefore, a comparison of the operating revenues is a fair measure of the amounts of work done and of the wear and tear on the property. In studying the expenditures to overcome this deterioration, however, conditions are different, for a dollar of expenditure did not produce the same relative improvement in 1917 as in 1916. The effect of the rising prices of materials had begun to make itself felt in 1916 and in some instances great advances had already occurred. However, this tendency toward increased costs continued steadily throughout the first nine months of 1917 so that a dollar bought less material in that period than in 1916. The same is true of labor. Wage rates have risen steadily and they were accompanied by decreased efficiency on the part of the men so that the labor returned per dollar of expenditure fell

sharply. As a result the increase in maintenance of way expenditures of 6.1 per cent measured in dollars was in reality an actual decrease of no mean proportions, measured in terms of productive work on the property. This occurred at a time when the facilities were being taxed to their utmost to handle the traffic and when the wear and tear on them was correspondingly great. This condition has necessarily led to an accumulation of deferred maintenance which it will be necessary to take up in the near future if the railways are to continue to perform the efficient service which the country is now demanding of them.

To the men in the maintenance of way department the outstanding feature of the past year's work has been the constantly increasing scarcity of labor. The cessation of European immigration, the shutting off of the Mexican supply through the enactment of the alien labor law, the transfer of over 1,000,000 men from industrial to military service and the widespread activity in industrial work have all served to increase the shortage of men throughout the country.

One development of the past year in this respect has been a marked improvement in the living conditions provided for transient laborers by the railroads. In an effort to hold as many men in their employ as possible many of the roads have given more attention to the provision of better housing and feeding facilities and have provided more conveniences in their camps. While many men individually have favored these measures for a number of years, the present acute shortage of labor has forced the managements to adopt them as a means of self-protection.

The competition for men between the railways and other industries and also between individual roads has led to considerably higher wages, the rates paid for track laborers on some roads now being twice those of two or three years ago. This competition for men and the bidding of one road against another has served further to demoralize the labor market and, as is inevitably the case, has resulted in a serious decrease in efficiency. Not only is there an absolute shortage of men, but the character of the men employed in railway service is probably lower than ever before and the return in productive work per dollar of expenditure has probably been lower than in any previous season.

Conditions in the material market have been also equally chaotic. Prices of materials have been climbing higher at an alarming rate, while even more serious is the fact that it has been almost impossible to secure many materials except with long delays. This has made it practically impossible to proceed with extensive programs of work with any certainty that they would be completed at definite dates. The formation of the Priorities committee late in the year is already assisting the roads, as the committee is in general giving preference to materials for which the roads can show an immediate need, thereby giving them an advantage over other work less necessary for the public welfare at the present time. The fixing of prices has also resulted in important reductions in some instances and, equally important, has tended to stabilize the market and put a stop to the pyramiding which has been going on for some months.

Because of the rapidity with which conditions are changing it is difficult to predict what the new year will bring forth. Little hope can be held out for an improvement of the labor situation. The industries of the country will undoubtedly be forced to operate at high speed for the continuance of the war and as long as these conditions exist the railways will continue to suffer from a shortage of labor and the inefficiency of that which they can secure. The principal relief lies in the substitution of mechanical appliances for men wherever this can be done and the coming year will undoubtedly see a remarkable development of labor saving equipment in the maintenance of way field. With reference to materials, the Priorities committee will undoubtedly be of direct assistance to the roads in enabling them to obtain those materials for which they can show real necessity. While supplies will undoubtedly be limited to the bare necessities for the duration of the war, most of those now desired by the roads are of this character, and if proper application is made they should be able to secure sufficient materials to enable them to maintain their properties to the standards necessary to render the transportation service which the nation demands.

Car Development in 1917

DURING THE PAST TEN YEARS the average number of cars ordered per year has been in the neighborhood of 135,000. There were built during the past year 119,363 freight cars for domestic use but only 79,367 freight cars were ordered. There is, therefore, a material shortage of new freight car equipment even for ordinary conditions and particularly so for these extremely busy times. Prices, labor, material, deliveries and lack of funds have all contributed to keep the railroads out of the market.

Last year at this time there were on order with the car companies over 100,000 freight cars. The material market was such that deliveries were set for from nine to twelve months from the time the orders were placed. This year there are some 60,000 cars on order for domestic use and some 20,000 for foreign delivery, but the material market has been much relieved and orders placed now can be delivered in from three to four months. Whatever arrangements are made by the government to provide the necessary funds for the purchase of cars, the car builders are ready to do the work with practically open books. With a capacity of 25,000 cars per month they can do much to relieve the future car situation.

The number of freight cars ordered for domestic use during the past year is the smallest number since 1908; it is less than half of those ordered the previous year and is about 58 per cent of the average number ordered per year during the previous 10 years. Of about 80,000 cars over 21,000, or about 27 per cent, were ordered from railway company shops in contrast to 19,322, or 11.7 per cent, the previous year. This is accounted for by the poor deliveries the car builders were giving during the early part of the year, but with that situation much improved the railroads will now be able to devote their facilities to car repairs, leaving the new work for the builders.

The proportion of all-steel, wooden and other kinds of equipment to the total number of cars ordered remained practically the same as the previous year. There was a decrease in the percentage of box and hopper cars ordered and an increase in the percentage of refrigerator, gondola, flat and tank cars ordered.

There were more wooden cars built last year than the year before. Of the 119,363 cars built for domestic use, 12,273 were of all-wood construction and 61,115 all steel. Over 11 per cent, or 13,488 cars, were built by the railroad companies themselves. This is a much larger percentage than usually obtains.

There were only 1,124 passenger cars ordered for domestic use during 1917, which is the smallest number since this paper commenced its compilations in 1901. Of these only 23 were of all-wood construction; most of them were of all-steel construction.

With all the decrease in car production and orders, the types of cars built during the year were not devoid of interesting features in their design. There has been produced an all-steel refrigerator car, an 85-ton capacity car with five hoppers, a 120-ton capacity coal car, a new type of self-propelled motor car and notable examples of steel passenger cars.

The all-steel refrigerator car was built by the Pennsylvania and is particularly interesting. The superstructure is vir-

tually a shell within a shell, the inner lining being self-sustaining and separated from the outside lining by four continuous layers of insulation extending from side sill to side sill over the top of the inner steel wall in one continuous piece. The cars are provided with basket bunkers, an insulated solid bulkhead and the space between the bulkheads is divided into three compartments. The Baltimore & Ohio and the Michigan Central have built refrigerator cars which are particularly well insulated, the insulation being applied solid instead of with the usual intervening air spaces. These cars have the basket ice bunker with the solid bulkhead.

The Virginian 120-ton capacity coal car marks a most important step in the construction of this type of equipment. It is provided with the Lewis articulated six-wheel truck having a wheel base of 9 ft. The car weighs 73,900 lb. and has a ratio of revenue load to total load, with 10 per cent overload of 76.4 per cent. It represents a design which has been given the most careful study, and contains many interesting features. The Pennsylvania 85-ton capacity hopper car with five hoppers, has a light weight of 60,000 lb. and a gross cubical capacity of 3,228 cu. ft. as against 4,422 cu. ft., the maximum cubical capacity of the Virginian car is also noteworthy.

Among the passenger cars those built for the Delaware & Hudson and for the Erie represent real progress in the design of all-steel passenger equipment. The Delaware & Hudson cars are 72 ft. 8¼ in. long over body end sills, they weigh 138,700 lb. and have a seating capacity for 90 passengers. The Erie cars are interesting on account of the ingenious construction of the superstructure. The distribution of metal is such that a stiff construction has been obtained with a saving in weight. These cars are 70 ft. long over the body end sills; they weigh 110,900 lb. and have a seating capacity for 76 people, including 12 seats in a smoking compartment.

The prospects for improvements in design during the coming year are promising, particularly in freight cars. With the heavy demand for freight equipment new cars will be built and every means will be taken to get them promptly. With private and corporate interests being held subordinate to the nation's needs, the "standard car" will receive more serious consideration. A committee of the American Railway Association has been working on this problem for some time. Sample cars have been built and much study has been given the question. The committee has been unable as yet to come to an agreement. It is extremely desirable that the matter be settled as promptly as possible so that the designs can be used for the large amount of new equipment which must be constructed in record time during the current year.

Optimism in the Supply Field

OPTIMISM is the word that most aptly characterizes the feelings of railway supply men as to the outlook for the car and locomotive markets in the coming months. The car and locomotive builders and the specialty manufacturers have not by any means had a bad year in 1917—but they have, nevertheless, had to do considerable worrying. The combination of circumstances during the past fortnight, however, has put an entirely new and brighter aspect on the situation. The President's taking over the railways has been received with favor in the supply field. For one thing, it is confidently expected that the guaranty of the average earnings for 1915, 1916 and 1917 will now permit the railways to get back once more into the market for new equipment ,and that in the very near future. For another thing the fact that the President has appointed one of the biggest men in his Cabinet to be Director-General of Railways is understood to indicate that the administration realizes more fully than ever the importance of railway transportation in winning the war. In other words, supply men confidently expect that railway equipment requirements will receive much prompter attention than they have been receiving for the last six months. And, as if good always had to come in bunches, it also happens that the material situation has eased considerably recently both as to prices and deliveries.

The labor situation still looks bad, but the railway supply people are no worse off than any other of the country's industries. The Russian situation, bad as it is in the broader aspects, even lends some small grounds for optimism. The collapse of Russia has been a very serious event for America, but there is a silver lining to every cloud. In the case of Russia's plight, the silver lining seems to relate to the American locomotive situation. Russia has placed orders on our books this year for something like 700 locomotives. It was about to close for 1,500 more, and shop arrangements had even been made for them to the detriment of deliveries on orders for our own roads at home. The orders for the 1,500 Russian locomotives will now undoubtedly be sidetracked and work will be begun immediately, in fact, has already begun, on American orders which have been held up for months, and the American railroads need the locomotives badly.

Receiverships and Reorganizations

THE REORGANIZATIONS of railroad properties effected in 1917 are important. The receiverships that took place are quite unimportant. Three large railroad systems were reorganized during the calendar year, two—the Missouri Pacific and the Pere Marquette—by means of foreclosure sales, and one—the Chicago, Rock Island & Pacific—by means of a voluntary exchange of debentures for preferred stock and a subscription on the part of a syndicate of bankers to approximately $30,000,000 preferred stock, and on the part of former directors, to $5,000,000 preferred stock.

If the Chicago, Rock Island & Pacific reorganization had been an immediate and unquestioned success it would have proved a striking example of the exception to the general inability of railroads to do any financing in recent years through the issue of stock. As a matter of fact, however, the reorganization has not as yet by any means demonstrated itself a success, and the purchasers of the new preferred stock are faced with the possibility of a heavy loss. When the road went into the hands of receivers there were various individuals and financial institutions with conflicting interests in it. There were the Reid-Moore people, including D. G. Reid and Judge W. H. Moore, who were in control prior to the receivership. There were also various Chicago capitalists and estates representing conservative, legitimate investment interests, and, of course, in addition, a great number of individual bondholders, including large financial institutions in the East. Superimposed on this, or rather inserted in this complication, were the followers of N. L. Amster, a Boston banker, who himself had comparatively a small investment interest in the property.

Most of the eastern capitalists and financial institutions, with the exception of the followers of Mr. Amster, favored a foreclosure sale and thorough reorganization. Amster's followers held out for a reorganization without foreclosure, and they were rather surprisingly aided by the unprecedented prosperity which the Rock Island enjoyed in 1916. Whereas in the previous three years total net income had averaged less than $15,500,000, the total net income in 1916 was $23,429,000. It was this fact, probably, which had a good deal to do with persuading the conservative Chicago investment interests to side with the Amster faction. The fact that there was $23,429,000 available for interest in 1916, and that interest charges without foreclosure sale and scaling down of outstanding securities was only $15,350,000, was an argu-

ment for reorganization without foreclosure that proved too strong for eastern capitalists who had advocated a thorough reorganization.

Combined with this exceptional prosperity was the fact that there was a bitter fight on among the directors of the old company for control. The sale of over $35,000,000 of railroad stock, therefore, could hardly be ascribed to the desire on the part of the capitalists to make this particular investment.

The Missouri Pacific reorganization, while it required $41,000,000 of cash, was put through because it was backed by the great banking house of Kuhn, Loeb & Co. For years this banking house had been opposing Gould methods of railroad finance and had been acquiring control of the Gould properties, and the Missouri Pacific reorganization, with its subsequent effect on control of the Denver & Rio Grande, was a continuation of a financial policy so broad and backed by such great resources as to overcome the obstacles of raising $41,000,000 new railroad capital, which obstacles would have been insurmountable otherwise.

The Pere Marquette reorganization was the end of a long and exhausting conflict between different financial interests. It has been commented on many times before in these columns.

Looking back on the three important reorganizations of 1917, therefore, we find one the product of an exceptional year in earnings for the Rock Island; the second, a consummation of a long sought after victory for an immensely wealthy banking house; and the third, an acceptance on the part of investors of drastic losses.

The new receiverships are negligible, and of the roads which in previous years went into the hands of receivers and which still have to be reorganized, the Missouri, Kansas & Texas is the most important. If this road is to be soundly reorganized, its security holders will have to follow the example of the securityholders of the Pere Marquette and accept a very drastic scaling down of the face amount of their holdings. Second in importance is the Boston & Maine; apparently a sounder system of railroad regulation and a better and higher rate structure for New England will have to be precedent to any acceptable reorganization. There remain among the larger roads the Chicago & Eastern Illinois, for which plans have already been worked out for reorganization, and the International & Great Northern and Texas & Pacific, the two latter being Gould properties, which may be reorganized under Gould auspices or may, like the other Gould properties, pass under the control of some strong banking house.

A Change of Name

WITH THIS ISSUE, the name *Railway Age Gazette* disappears from our masthead and the name *Railway Age* appears in its place. Both the *Railway Age* and the *Railroad Gazette,* which were consolidated into the *Railway Age Gazette* in 1908, had had long, honorable and influential careers. It was, therefore, deemed desirable to retain a part of each of the old names in the name of the new paper, as indicating that the best features of each were to be retained. But the permanent use of a "hyphenated" name is awkward and undesirable. We hope and believe that our readers will find that the *Railway Age* will keep alive the best traditions and the best qualities of the papers from which it is descended.

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A Group of the Eleventh Engineers Who Fought at Cambrai

Comment on Government Control of Railways

Newspaper Cartoonists and Editorial Writers Discuss Various Phases of the New Situation

[Philadelphia Public Ledger]

SURELY, WITH THE ADVANTAGES of unification which governmental control now opens up, American skill and managing ability can speed freight shipments to double or treble the record made under the wastes of division and private competition. Mr. McAdoo retains his secretaryship of the treasury. Thereby, the President says, Mr. McAdoo's double authority will enable him to co-ordinate systematically the financial interests of the railroads. The advantages of system, unity and co-ordination which the mere fact of direction under the commander-in-chief of the army and navy permits will have an instant effect in heightening the productive capacity and value of the great carriers. Their combined strength and the strength of their staffs will be added to Mr. McAdoo. He will be responsible. But every facility is offered him for grasping his responsibility splendidly. It is his portion to help win the war with the most powerful of all instruments for waging war, namely, the best-built system of transportation in the world.

[Wall Street Journal]

No better solution of the railroad problem could have been chosen than that which has been adopted by the President. It takes from the railroad managers the problem of finance, leaving them to the expert business of operating their roads. It transfers to the shoulders of the United States Treasury the financial burdens which have harassed railroad management. It gives to the holders of securities a guarantee which amply justifies the striking recovery in Thursday's prices.

Among the members of Mr. Wilson's Cabinet, not one has matured and broadened more notably than Mr. McAdoo. It may be said that the Secretaryship of the Treasury alone is a man's size job, and that the control of 250,000 miles of railroad calls for all the time and ability of a first-class man. But Mr. McAdoo will have the best assistance, and it may be taken that his Government and Treasury experience will be directed to general policy and financing, while the railroad operating officers will work out the technical problem of the movement of freight and passengers.

[New York Sun]

Ten men's brain power, ten men's nerve energy and physical endurance, would not be more than adequate to the load that rests upon the Secretary of the Treasury in this time of war in his own official sphere. How manfully Mr. McAdoo is carrying the burden everybody knows. At what physical cost and personal risk nobody but himself can know. Perhaps he himself doesn't know.

If that makes a ten-man-power job, surely a twenty or a fifty-man-power job is that which the Dictator of Transportation is now bravely undertaking at the President's instance; an untried experiment; an unmeasured work of organization, of co-ordination, of application of special knowledge to countless problems of policy and detail involved in the unification, operation and financing of two hundred and fifty thousand miles of railroad for the period of the war.

[Cleveland Plain Dealer]

The railroads have failed signally to meet the requirements of war. It may be profitless now to discuss the reasons; the fact stands confessed. Palliative methods have proved insufficient. At a time when the conditions of national life put unprecedented demands upon our transportation systems, these systems have shown weaknesses unsuspected. They have failed to meet the test.

It is vital to the national safety that the railroads shall render the highest service they are capable of. It is in part a matter of management, or co-operation, and in part of finance.

The various systems must be operated as a single, efficient unit. There is no excuse for play of selfish interests; there can be no question of advantage between one line and another. From now on each road is to contribute its individual share toward the efficiency of the whole.

[Florida Times Union]

It may be that this step will help solve the transportation problem. The roads will continue to be operated by their regular force though under a head appointed by the government. They will be able to act as one while without such action as the government has taken or the repeal of laws forbidding pooling they would have been compelled to continue a competition that whether healthful or not in normal times would have been a hindrance under present circumstances. The result ought to bring improvement from the reasons stated without considering any other reasons.

But when we consider the labor problem we see where a decided improvement may be made. The railroads will be as much a part of the government as the armies will be. Interference with the operation of the railroads will be as truly an act of mutiny as interference with the operations of the army would be. A strike that would impair the efficiency of the transportation system would naturally stand on the level with a refusal to fight on the part of a combination of soldiers.

All this would be logical but we shall have to wait to see whether the government will act on it. It may be that the government, in acknowledged control of the railroads, will make concessions to every demand of labor as it forced concessions when in virtual control; or it may prove true that it will expect as much patriotism and require as great a display of patriotism from high priced men safe from danger as from the thirty dollars a month soldiers at the front who are in range of German cannon. If the government pursues a policy of giving labor unions everything they demand and charging it up to the people, the railroads will find later greater difficulties than they ever experienced at holding up to a level their business cannot pay when it is back in their hands and they are not permitted to charge up any deficit to the people.

[Indianapolis News]

Though new legislation will be necessary, and will doubtless be forthcoming, the director-general, even under present conditions, will have vast powers. Also he faces a heavy responsibility. He announces that he will utilize the services of the Railroads' War Board, and rely for advice on the experts of the Interstate Commerce Commission. Of course, he will work through the staffs that are now operating the roads. Questions of finance and reconstruction will be dealt with later. In regard to them the co-operation of congress will be necessary.

It is a great experiment that the country is now trying. If the result is to make the nation more efficient in the war, even those who doubt the wisdom of the policy, and fear its extension, will rejoice. All know that the railroad situation was very bad. It is hoped and believed that there will be a speedy bettering of conditions.

Rogers in the New York Herald.

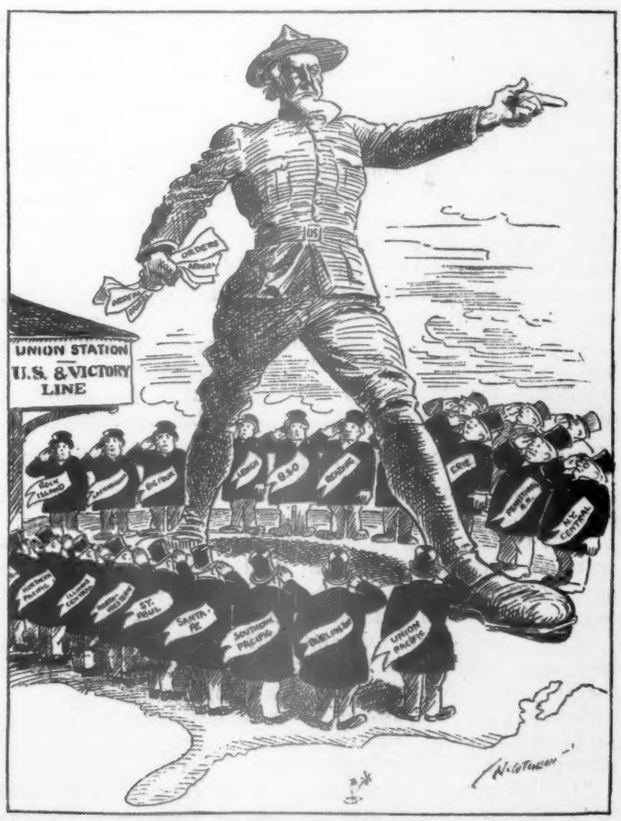
McAdoo Smoothing Out Transportation Wrinkles

Ding in the New York Tribune.

Our New Train Crew

Rollin Kirby in the New York World.

The Rookie



McCutcheon in the Chicago Tribune (Copyrighted).

The New Train Dispatcher of the U. S. & V.

American Railway Efficiency During the War

Review of Accomplishments and Increased Service in Nine Months Since United States Entered Conflict

THE RECENT DISCUSSION of proposals for new ways of dealing with the transportation system of the country and President Wilson's action in taking control of railway operations during the war has obscured to some extent the remarkable record of accomplishment the railways have already achieved under their own direction and with little assistance from the government.

It is now practically nine months since the United States became an active participant in the great world war, and only a few days less since the organization was formed under which the railroads of the country have been working to perform their important share in the great enterprise. In view of the change in the policy under which their service is to be rendered, therefore, this is an opportune time to review the results of their operations during that period. although their activities have been rather fully described currently in the *Railway Age Gazette* during the past year.

The change in the railway policy of the country is sometimes referred to as an attempt to repair a "breakdown" of the transportation system. Far from having "broken down," however, the railways of the United States during the past nine months and even for a considerable period before that time have made a record for efficiency which in comparison with many other industries and all previous records of their own, is nothing short of remarkable, especially under the conditions with which they have been confronted.

Railway War Service

Railroads have furnished more service than ever before in their history.

Military traffic handled without abatement of commercial traffic.

Fourteen per cent more freight carried than in 1916, including 18 per cent more coal.

Passenger service breaks all records.

Over 2,000,000 soldiers and their equipment transported safely and without delay.

Over 134,000 carloads of freight moved to cantonments and training camps which still require 2,500 carloads of supplies daily.

Nine regiments of railroad men in service in France.

Box and coal cars pooled and competition ignored in routing of troops and military supplies. Facilities of eastern railroads pooled under direction of Operating Committee.

The co-operation of the railways with the government and the efficient service they have been rendering have been frequently recognized and commented upon by prominent officers in the government in various public statements.

Railway Co-operation Appreciated by Government

President Wilson in his statement announcing the taking over of the railroads said:

"The committee of railway executives who have been co-operating with the government in this all-important matter have done the utmost that it was possible for them to do; have done it with patriotic zeal and with great ability; * * * and if zeal and ability and patriotic motive could have accomplished the necessary unification of administration it would certainly have been accomplished."

Secretary of War Baker, in his annual report for 1917, said regarding the way in which the railroads have co-operated with the War Department:

"In this general connection it seems appropriate to refer to the effective co-operation between the department and the transportation agencies of the country. For a number of years the Quartermaster General's Department has maintained close relations with the executives of the great railway systems of the country. In February, 1917, a special committee of the American Railway Association was appointed to deal with questions of national defense, and the co-operation between this committee and the department has been most cordial and effective, and but for some such arrangement the great transportation problem would have been insoluble. I am happy, therefore, to join the Quartermaster General in pointing out the extraordinary service rendered by the transportation agencies of the country, and I concur also in his statement that 'of those who are now serving the Nation at this time of stress, there are none who are doing so more wholeheartedly and efficiently than the railroad officials who are engaged in this patriotic work.'"

The Quartermaster General of the Army in his annual report said:

"The Special Committee on National Defense is a voluntary organization of the railways, serving purely through a spirit of patriotism. Its activities have been extended far beyond what was originally contemplated, even for the military service. The railroads of the country are operated practically as one continental system with the result that the congestion, which would have been intolerable without such an organization, has been in every case ameliorated and in many cases completely removed. The Railroad War Board has been in practically continuous session at Washington since April 23. No more patriotic or self-sacrificing body of men is at this time serving the government.

"It has extended to the distribution of power between the railroads, the adjustment of passenger train service in accordance with national requirements, has furnished personnel and material for rehabilitation of the railways in France, has aided in every way possible the great national endeavor which has become the duty of every citizen of the country."

A special committee of the National Association of Railway Commissioners, in its report to the recent convention of the association, said:

"The fine sense of duty on the part of the leaders of the country's transportation systems that prompted this resolution deserves our respect and praise. We believe, moreover, that this resolution must also be considered as a most important document in American railroad history. The pledge of these men that they will operate their properties as a 'continental railway system,' that they are merging during the war 'all their merely individual and competitive activities in the effort to produce a maximum of national transportation efficiency,' opens a wide outlook. It must be remembered that it is the executive heads of the railroads who

thus realize that the highest national transportation efficiency can be given only through the united operation of a continental railway system."

The Interstate Commerce Commission, in its annual report after referring to the organization of the Railroads' War Board, said in part:

"Without attempting to detail the activities on the part of the railways through this organization it will suffice here to say that they have responded to and supported the Executive Committee, which in an earnest way has attempted to deal with the vexatious and troublesome questions and to meet the unprecedented demands upon the railways."

In this connection the fact should not be lost sight of that the railways of this country have done one thing that has not even been attempted by the railways in the other countries at war. They have tried to handle not only the large volume of war traffic and troop movement for the government, all of which has required expeditious service, but they have also tried to handle a rapidly increasing commercial traffic at the same time. In England when the railways were called upon to transport large numbers of troops, all other traffic, both freight and passenger, was for a time suspended on the lines used by the soldiers, and in France during the first mobilization of the army all other traffic was suspended for two weeks.

Breakdown of Competitive Policy

The reasons advanced for the new policy make it apparent that if there has been a breakdown, it is rather a breakdown of the governmental policy of regulation pursued for the past 30 years. The primary purpose of the suggestion for government control is to effect a degree of "unification" which is regarded as impracticable for the railroads to accomplish themselves, because of the influence of the spirit of competition which the government has heretofore made every effort to force upon them. Another purpose is to improve their credit and to free them from the numerous restrictions of the laws passed to prohibit such efforts toward unification as have been made in the past and to force competition among railways and between railways and other forms of transportation.

The result desired is an increase in the efficiency of railway operation. The method adopted to accomplish it is primarily to change the policy of regulation rather than changing the operating organization. Railroad men themselves have frequently pointed out, in the years during which the entrance of the United States into the war was being anticipated, in theory if not in practice, certain changes in the policy of railway regulation which they believed would result in increasing their efficiency in service. They have advocated a greater centralization of regulating authority and a curtailment of some of the restrictions upon them: 1918 is to witness an experiment with both of these principles, although not in the way that railroad men had in mind.

Railway War Policy

As the first great accomplishment of the railways in the war, it may be mentioned that it was given to them to formulate a railway war policy for the United States, something that the government itself had failed to do.

The opportunity was presented to them in a resolution of the Council of National Defense, calling upon the railroads "to so organize their business as to lead to the greatest expedition in the movement of freight." Within five days after war was declared they had responded by adopting a resolution pledging themselves to "co-ordinate their operations in a continental railway system, merging all their merely individual and competitive activities in the effort to produce a maximum of national transportation efficiency," and by creating an organization to carry out its purpose. This organization was given "general authority to formulate in detail and from time to time a policy of operation of all or any of the railways, which policy * * * shall be accepted and earnestly made effective by the several managements of the individual railroad companies."

The policy thus announced was promptly accepted by the government. The Railroads' War Board was made a co-operative committee of the Council of National Defense, which in its first public report placed at the head of its list of accomplishments "the mobilization of 262,000 miles of railroad."

Recently surprise has been expressed in some quarters that this mobilization had not immediately expressed itself in the complete abolition of individual railways and the kind of pooling of railway traffic which the Sherman law, the anti-pooling law and the law giving the shipper the right to route his freight specifically prohibit. As a matter of fact, a good many things have been done by railways since the war which if they had been done at any other time might easily have led to indictments, and possibly also the railway executives might have gone further than they have toward "unification" without actually being sent to jail. It is also a fact, however, that while many representatives of the government have been quite willing to sacrifice legality to efficiency, and have said so, the railroads have been reminded from very high sources that the restricting laws are still on the books.

Moreover, it was hardly to be expected that everything necessary to execute the plan adopted by the railways on April 11 should have been put into effect at once.

Steps Toward Unification Already Taken

The first definite step toward co-ordinating the activities of 631 railroads in a national system was put into effect after the first meeting of the Railroads' War Board on April 26, and consisted of a pooling of all the box cars in the country under the direction of the Commission on Car Service. The plan of ignoring competition and placing all railway facilities at the disposal of the government without regard to individual interests was further developed in the routing of the troop movements and of the freight for cantonments and other training camps. The most radical step yet taken was the appointment on November 24 of the General Operating Committee of the Eastern Railroads, with full authority to pool the facilities of the eastern roads to the extent necessary and also to draft locomotives and other assistance from western and southern lines.

If any of these things had been done in any other single year it would have been regarded as marking a milestone in railroad history. In war time, however, all these have not been sufficiently spectacular.

Aside from these three important manifestations of the ability of the railroad executives to think in terms of national service instead of in terms of traffic for their own lines, the achievements of the railways of the United States, under the direction of the Railroads' War Board, are most specifically recorded in the monthly report recently compiled for the Railroads' War Board by the Bureau of Railway Economics giving the statistics of freight operation for the month of September and for the six months, April to September, inclusive. These show that the railroads had handled 14 per cent more traffic in the six months after war was declared than they had handled in the corresponding six months of 1916, in which year they handled 50 per cent more freight service than in 1915. They also show that this record-breaking volume of business was handled with practically no increase in facilities as compared with 1916, which means also that there has been very little increase as compared with 1915.

Record Breaking Traffic

While the railroads have also carried a record-breaking passenger traffic, and have transported over 2,052,000 sol-

diers safely and without delay, the freight service performed is the most important index of their usefulness to the nation. Freight operating statistics since the end of September are not yet available, but the freight earnings as reported by the Interstate Commerce Commission for the 10 months including October show nearly as much business handled in 10 months of this year as in the whole of 1916, while the freight business in October was greater than for any previous month in railroad history. As there was a slight falling off in traffic in September, but a very large increase in October, it is probable that later figures will show an even greater increase in traffic than is shown in the six months' report. The railways have succeeded in securing much more service from every track, every car and every locomotive than ever before in their history. In fact, practically the only material they have had to deal with whose efficiency has not been increased has been the almighty dollar. Even during the month of November they succeeded in reducing the number of unfilled requisitions for freight cars from 140,000 on November 1 to 117,000 on December 1. This represents an increase of only 10,000 in the shortage, as compared with December 1, 1916, when the United States was still at peace.

Increasing Efficiency

Probably the most important single step toward increasing the efficiency of the available facilities has been the campaign for heavier loading of freight cars, in which the hearty co-operation of shippers, the Interstate Commerce Commission, and many of the state commissions was obtained. The result so far as the figures are available is seen in the report showing that for the first six months after war was declared an average of 2.2 tons has been added to the average carload, which has been increased from 24.8 to 27 tons, or 8.9 per cent. As the freight car miles amounted to over 8,250,000,000, the addition of over 2 tons to each carload meant that 18,150,000,000 ton miles more freight was carried with the same number of cars.

In addition to the heavy carloading, stricter supervision on the part of railroad officers also enabled them to increase the average number of tons per train from 626 in 1916 to 675 in 1917, while the average mileage per car per day was increased from 27.3 to 27.9 and the mileage per locomotive per day was increased from 65.8 to 68.7. In the six months alone the railroads handled over 25 billion ton miles of revenue freight more than in the corresponding period of 1916. Also the percentage of freight locomotives in shop or awaiting shop was reduced by 9.1 per cent and the percentage of freight cars in shop or awaiting shop was reduced by 7.8 per cent.

The first plan announced by the Railroads' War Board after its organization, in the direction of increasing the efficiency of the railway plant by greater co-ordination of the available facilities was the pooling of box cars, by suspending the car service rules and placing their distribution under the direction of the Commission on Car Service. This commission has since ordered the movement of box cars without regard to individual ownership but in accordance with the requirements of the traffic. Under its direction 222,000 cars have been ordered moved empty since May 1, often in trainload lots, from roads on which the prevailing direction of traffic had caused them to become accumulated to roads which needed them for loading. At first coal and refrigerator cars and other special equipment were not pooled, but were left subject to the rule that they should be returned, when made empty, to the owning road. Recently, however, a pool of open-top cars has been established under the direction of the General Operating Committee of the Eastern Roads and an effort is being made to include in it not only railroad-owned cars but the cars owned by coal companies.

Another measure adopted at the suggestion of the War Board, which undoubtedly would have laid the roads open to a charge of conspiracy in other times, was a general movement toward curtailment of unnecessary passenger service in order to release cars, engines, men, fuel and track room for the more necessary freight service. Since May 1 the railroads have been able to reduce their passenger service by approximately 28,656,983 train miles, thereby facilitating the movement of military traffic and coal, food products and supplies needed by the government, by saving 1,800,000 tons of coal per year and releasing 570 locomotives and 2,800 trainmen for freight service. For a time most of these reductions were on branch lines of little traffic and resulted in handling on one or two well filled trains the same number of passengers formerly served by two or three half filled trains. Of late, however, it has been necessary to take more drastic steps, such as the discontinuance of the Broadway Limited and other through trains and several roads have used newspaper advertising to urge people to refrain from unnecessary travel at Christmas time.

Troop Movement

One of the first of the military tasks with which the railroads were confronted was the transportation of the enormous tonnage of freight needed for the hurried construction of the army cantonments and training camps. Here competition was in most cases ignored and supplies were routed over the lines that were in a position to give the best service. Agents of the War Board organization were stationed at all camps and concentration points and at military headquarters to co-operate with the war department officials in every way possible. A total of 134,000 carloads of freight have had to be hauled to the National Army and National Guard camps and approximately 2,500 carloads of food and other necessities are being delivered daily.

Soldiers have been moving in large numbers, both to the seaboard for embarkation and to the various training camps, since about August 1 and the total movement up to date has amounted to over 2,000,000 men. This figure, of course, includes the duplications involved in handling the same men more than once, as to the training camps and later from the camps to concentration points or seaports. Of the total approximately 687,000 men were included in the mobilization of the national army, who were without equipment, but the other soldiers have usually been accompanied by their impedimenta, which has required the use of many express, baggage and freight cars. Of course, all of this traffic has complicated matters and increased the difficulty of moving the freight traffic. While the addition of an equal number of ordinary passengers to the railroad traffic would have been handled without difficulty, the troop movement has required special schedules and 3,600 special trains. Here again the old methods of competition were discarded and the traffic was virtually pooled according to routings worked out by committees of passenger and operating officials in such a way that the most direct routes were used and no line was allowed to become congested.

The Railroads' War Board has also performed important services in co-operation with the representatives of the Allies in co-ordinating the movement of export food, munitions and other supplies and the various railroads individually have taken an active part in the campaign for food conservation and for the sale of Liberty bonds.

18 Per Cent Increase in Coal Traffic

While the fact that the shortage of coal may be attributed in part to scarcity of railroad equipment has probably been the cause of more complaint against the railroads than anything else it is still true that probably the best example of their increased service is afforded by their record in moving coal. During the eight months, April to November, there were moved by rail 1,101,677 more carloads of anthracite and bituminous coal than in the same months of 1916, an

increase of 15 per cent in anthracite and 18 per cent in bituminous over the best record previously made. The increased coal production this year has been less than 10 per cent, but the railroads have had to haul a great deal that formerly moved by water.

During the summer months when the railroads had empty coal cars available coal production was being reduced by labor troubles and other causes, and if the roads are now unable to handle promptly as much coal and other freight as is desired, their situation in that respect is not different from that of most other industries that have been unable to produce all the steel, coal, flour, ships and sugar needed, any more than the hotels, telegraph and telephone companies or even the mail service have been able to furnish as satisfactory service as is desired.

The reason for this situation is the same in the case of the railways as in the case of other industries. They cannot get anywhere near all the men they need; they have lost many of their most efficient officers and employees by enlistment in the service of the government and by the draft, and it has been impossible for them to get needed materials and supplies in sufficient quantities. The railways have also been affected by a factor that has not been present in the case of most industries—they have been unable to adjust their prices to provide the needed revenue for additional facilities. In the year or two before the war when they could have secured cars and locomotives at favorable prices, most of them were not in a financial condition to do so and during the past year they have had to allow their orders for cars and locomotives to be postponed so that the builders could send their output to France and Russia.

Railroad Men at the Front

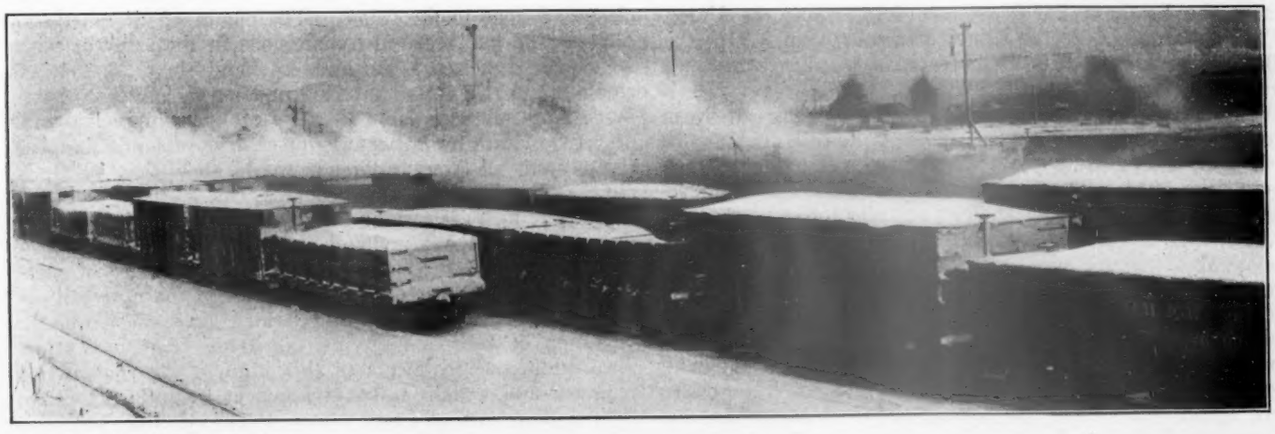
While the most important part played by the railroads in the work of the war naturally has been in the direction of increasing their normal activities in this country, they have also contributed their share toward the actual fighting. Under the direction of S. M. Felton, director general of railways, nine regiments of railroad men have been recruited in this country and sent to France to aid in building and repairing railroads, shops and terminals, both on and back of the firing line, and some of them have already given a good account of themselves as the first of the forces from the United States to become engaged in actual hostilities. A considerable number of American railroad officers are now engaged in transportation work in France under General Atterbury and another large unit of railroad employees and officers was recently despatched to Russia to organize the operation of the Russian railway system.

Railroad Officers in the Government Organization

The railroads have also furnished from among their officers some of the men most active in the war councils of the government, who have been given leave of absence from their roads and are giving practically all of their time to government service. Daniel Willard, president of the Baltimore & Ohio, is chairman of the War Industries Board of the Council of National Defense; Robert S. Lovett, chairman of the Union Pacific, is a member of the War Industries Board and is also the administrative officer appointed by the President to exercise the powers conferred by the priority of transportation act; S. M. Felton, president of the Chicago Great Western, is director general of railways for the War Department, in charge of the organization and despatch abroad of railway forces and materials. (Mr. Felton's title has now been changed to director general of military railways.) W. W. Atterbury, vice-president of the Pennsylvania, is director general of transportation in charge of railway operations in France. Edward Chambers, vice-president of the Atchison, Topeka & Santa Fe, is head of the division of transportation of the United States Food Administration; D. W. Cooke, vice-president of the Erie, is in charge of the transportation department of the Red Cross supply service; G. N. Snider, coal traffic manager of the New York Central, is head of the transportation department of the Fuel Administration.

Canadian War Records Photo

Canadian Wounded at Lens Being Transported on a Light Railway Truck



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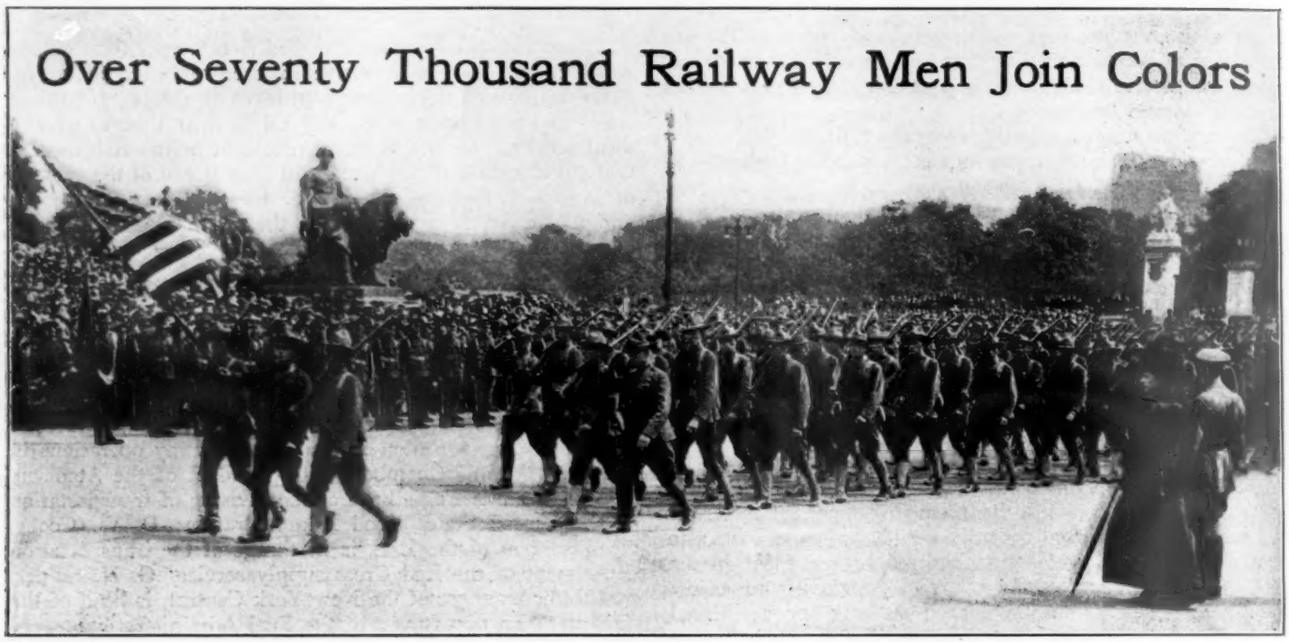
Over Seventy Thousand Railway Men Join Colors



Railway Regiments Were First United States Troops Ever Reviewed by the King of England. Photo Copyright by Underwood & Underwood.

RECENT REPORTS from American railroads indicate that approximately 70,000 men have left railway service to join the colors. Inquiries addressed to all lines, 100 miles in length or over, brought replies from 122 railroads with a combined operated mileage of 202,634, or almost 78 per cent of the mileage of the country. These roads reported that about 54,000 officers and employees had joined the armed forces of the United States since the declaration of war, of whom 1,408 received commissions. It is reasonable to assume that the remaining railroads of the country have supplied the army and navy with a proportionate number of men. At the rate at which employees of the 122 lines volunteered or were drafted, the number for the remaining carriers should approximate 16,250, making the total number of railway men in army or navy service nearly 71,000, or over four per cent of all the railroad employees in the United States.

Some individual roads were exceptionally heavy contributors to the nation's military and naval forces. The Pennsylvania system alone has 9,019 in the army and navy, or about one man to every mile of line operated. The New York Central system has the next best record with 7,143 men under arms. Other roads which gave large numbers of employees to the colors are the Santa Fe lines, approximately 3,000 men; the Southern Pacific system, 2,185 men; the Union Pacific system, 2,008; the Illinois Central system, 1,916; the Baltimore & Ohio, 1,760; the Chicago, Milwaukee & St. Paul, 1,645; the Northern Pacific, 1,638, and the Chicago & North Western, 1,573. The patriotic sacrifices of American lines compare favorably with those of neighboring roads in Canada which have been sending large numbers of men to the trenches ever since 1914. The Canadian Pacific alone has supplied about 13,000 men to the Canadian overseas forces.

The highest commission held by any railroad man is that of W. W. Atterbury, vice-president of the Pennsylvania Railroad, now director-general of American-operated railways in France, with the title of brigadier-general. A large number of railroad officers have been commissioned colonels and majors. The Pennsylvania system has five colonels, one lieutenant-colonel and seven majors in army service. The Southern Pacific lines have one colonel and four majors in the army; the Baltimore & Ohio, five majors; the Chicago, Milwaukee & St. Paul, three majors; the Chicago, Burlington & Quincy, a lieutenant-colonel and a major; the Northern Pacific, a lieutenant-colonel and two majors; the Louisville & Nashville and the North Western, one colonel each; the Erie, the Chicago, Rock Island & Pacific, the Chicago, St. Paul, Minneapolis & Omaha, the Delaware & Hudson, and the Southern, two majors each.

Owing to the fact that the carriers are burdened with an unusually heavy traffic and are short of men, some roads were able to supply partial information only, concerning their contributions in men to the army and navy. The New York Central, which undoubtedly furnished the nation's armed forces with a large number of officers, did not find it possible to compile a list of employees who have received commissions. The Great Northern, on the other hand, was unable to furnish data showing the total number of employees who volunteered or were drafted. On the whole, the information received from the various railroads is complete and accurate.

The inquiries sent out by the *Railway Age* asked, first, for a list of the railroad officers of ranks equal to or above trainmaster, division engineer, master mechanic or general agent who had entered military or naval service, with the military rank, department and assignment of each. The returns for 122 lines showed that 160 railroad officers of this class had gone to the colors. The names of all other employees who had received commissions in the army or navy were also requested. The data at hand shows that 1,248 employees of this class are now army or navy officers. Inasmuch as roads with 202,634 miles of line supplied a total of 1,408 officers for our armed forces, it is probable that statistics from all American roads would show that 1,800, or more, railroad men now hold commissions.

Railway men are serving their country in practically every department of the army and in various capacities in the navy. In addition, they are doing special service of great importance to the success of our armies in the nine railway regiments, organized last spring, which have taken over the operation of railroads serving the battle front in France. Two additional regiments of this kind, a car construction regiment and a light railways regiment, recently completed their organization at Camp Grant, Rockford, Ill. Late this fall, 200 railway officers from roads in the Northwest left

for Russia where, if political conditions permit, they will rehabilitate the Trans-Siberian railway. This expedition, known as the Russian Railway Service Corps, consists only of commissioned officers, ranging from colonel down to second lieutenant. Colonel George H. Emerson, formerly general manager of the Great Northern, will take charge of the operation of the Trans-Siberian. He has under him two general superintendents with the title of lieutenant-colonel and 12 division superintendents, with the title of captain and their staffs. The organization of the Russian Railway Service Corps and the railroad regiments for service in France has been carried out under the direction of S. M. Felton, president of the Chicago Great Western and director-general of railways with headquarters at Washington, D. C.

Although the transportation system of the country is placed next to the army and navy in its importance in the prosecution of the war, the railroads have not asked blanket exemptions for their employees. In spite of a very heavy traffic and the importance of the expeditious movement of government supplies, the carriers asked no favors. A consideration of the number of special railway units organized, in addition to the loss of men who volunteered in other branches of service or were drafted, leads one to the conclusion that the railroads have not only contributed their share of men to the armed forces of the land, but more than their share.

The following statistics from 119 railroads show the number of men in army or navy service, and the names of officers and employees who have received commissions, their military rank and the branches of service to which they have been assigned:

Apalachicola Northern

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
R. J. Lockwood	Vice-Pres. & Gen. Mgr.	2nd Lieut.	National Army

Officers who received commissions	1
Total number of employees in government service	1

Arizona & New Mexico

Total number of employees in government service	11

Arizona Eastern

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
E. C. Houle	Chief Surgeon	Captain	Medical Corps

EMPLOYEES WHO RECEIVED COMMISSIONS

G. B. Fairbanks	Clerk	Captain	Q. M. Corps
L. W. Neidhardt	Clerk	Captain	Q. M. Corps
W. F. Dwyer	Trav. Aud.	1st Lieut.	Coast Artillery
F. G. Meyer	Clerk	1st Lieut.	Ariz. N. G.
Herb't W. Worcester	Draftsman	1st Lieut.	
Fay Collins	Tel. Operator	2nd Lieut.	Signal Corps
J. G. George	Str. Kpr.	2nd Lieut.	Aviation Corps

Officers who received commissions	1
Employees who received commissions	7
Number of employees volunteering or drafted	79
Total number of employees in government service	87

Arkansas & Louisiana Midland

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
C. V. Allain	Auditor	2nd Lieut.	O. R. T. C.

Officers who received commissions	1
Number of employees volunteering or drafted	11
Total number of employees in government service	12

The Atchison, Topeka & Santa Fe Ry.

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
S. M. Saltmarsh	Car. Acct.	Lieut.-Col.	Infantry
B. J. Simmons	Div. Engr.	Captain	18th Engrs.
Fred Harvey	Mgr. Din. Cars	Lieut.	Aviation

EMPLOYEES WHO RECEIVED COMMISSIONS

G. A. Knapp	Off. Engr.	Major	315th Engrs.
John R. Jackson	Asst. Engr. Tests.	Captain	Ord. Dept.
George Schuster	Asst. Engr. Tests.	Captain	Ord. Dept.
Chester A. Grover	Mech. Insp.	Captain	Depot Brigade
Edmond E. Chapman	Asst. Engr. Tests.	Captain	Ord. Dept.
Clyde Kelly		Captain	Infantry
L. Overpeck	Yd. Master	Captain	13th Engrs.
S. A. Greenwell	Clerk	Captain	Cavalry
F. C. Blodgett		Captain	Q. M. Dept.
Edward M. Turner		Captain	9th Engrs.
C. W. F. Harper		Captain	Infantry
Garnette Rotan		Captain	Infantry
Charles Lamb		Captain	Q. M. Dept.
J. H. Balmat	Rodman	Captain	Q. M. Dept.
Harry M. Peck	Machinist	Captain	Infantry
F. B. Watterson	Draftsman	Captain	Engr. Corps
P. D. Cornell	Ch. Clerk	Captain	Naval Militia
G. C. Kennedy	Ch. Desp.	1st Lieut.	13th Engrs.
F. V. Blucher	R. H. For.	1st Lieut.	13th Engrs.
Tom A. Blair		1st Lieut.	115th Engrs.
Dick R. Reed	Material Insp.	1st Lieut.	Ord. Dept.
Elbridge C. Sanders	Asst., Test Dept.	1st Lieut.	Ord. Dept.
R. E. Bledsoe	Tax Agt.	1st Lieut.	Marines
Frank Myers	Clerk	1st Lieut.	
Albert W. Robinson	Asst. Test Dept.	1st Lieut.	Ord. Dept.
L. T. Taylor	Draftsman	1st Lieut.	Engr. Corps
Gilbert C. Mollison	Ast. Engr.	1st Lieut.	Sig. Dept. Aero Corps
J. G. Lott		1st Lieut.	France
J. Paul Richter	Asst., Test Dept.	1st Lieut.	Sig. Dept. Aero Corps
Merle V. Holmes	Engr. Dept.	1st Lieut.	E. O. R. C.
J. V. Butler		1st Lieut.	Highway Regt.
W. G. Payden	Mgr. Teleg. Off.	1st Lieut.	Signal O. R. C.
G. C. Brewster	Transitman	1st Lieut.	Infantry
G. O. Wheeler	Fireman	1st Lieut.	Sig. Dept. Aero Corps
A. X. Schroeter	Clerk	1st Lieut.	314th Engrs.

Officers of the 21st Engineers (Light Railways) Until Recently Stationed at Camp Grant, Ill.

Name	Railroad Position	Military Rank	Branch of Service
Edw. W. Falanders	Computer	1st Lieut.	7th Engrs.
R. A. Finney	Asst. R. of W.Agt.	1st Lieut.	National Guard
Enoch M. Brown	Wire Chief	1st Lieut.	Sig. Dept.Tel. Bat.
James Vawter	Asst. Engr.	1st Lieut.	315th Engrs.
J. E. Bell	Clerk	1st Lieut.	315th Engrs.
R. E. McCullough	Transitman	1st Lieut.	E. O. R. C.
H. C. DeGrummond	Operator	1st Lieut.	Infantry O R. C.
C. T. Duff	Asst. Atty.	1st Lieut.	Infantry O R. C.
E. Schliewen		1st Lieut.	E. O. R. C.
H. M. Whiting		1st Lieut.	Engr. Corps
Gordon H. Fernald		1st Lieut.	314th Engrs
John J. Moore	Draftsman	1st Lieut.	Engr. Corps
H. R. Miller	Mach. Helper	1st Lieut.	National Guard
W. H. Brownell		1st Lieut.	Infantry
J. A. Noble		1st Lieut.	315th Engrs.
Walter Bohnstengel	Asst. Engr. Tests.	1st Lieut.	Ord. Dept. O.R.C.
A. M. Watkins	Rodman	2nd Lieut.	Infantry, O. R. C.
S. S. McConnell	Clerk	2nd Lieut.	13th Engrs.
Francis A. Nolan	Clerk	2nd Lieut.	
James Joyce	Clerk	2nd Lieut.	
Paul Nowers	Clerk	2nd Lieut.	
J. D. Baskin		2nd Lieut.	Infantry
H. J. Morgan	Draftsman	2nd Lieut.	315th Engrs.
E. I. Watson	Draftsman	2nd Lieut.	Field Artillery
D. G. Hume		2nd Lieut.	U. S. Army
B. H. Davis	Clerk	2nd Lieut.	Infantry
Paul Thomas	Contr. Frt. Agt.	2nd Lieut.	
W. W. Haggard	Asst. Engr.	2nd Lieut.	E. O. R. C.
E. G. Edwards		2nd Lieut.	
J. J. Connell		2nd Lieut.	
L. A. Hasty	Attorney	2nd Lieut.	
R. A. Van Ness	Draftsman	2nd Lieut.	E. O. R. C.
H. S. Mahood	Draftsman	2nd Lieut.	E. O. R. C.
Walter I. Potts	Brakeman	2nd Lieut.	Infantry
H. W. Laird	Clerk	2nd Lieut.	Infantry
D. M. Gaither	Transitman	2nd Lieut.	National Guard
J. B. Hughes	Rodman	2nd Lieut.	Field Artillery
L. Tucker	Computer	2nd Lieut.	314th Engrs.
C. C. Fletcher	Ast. R. of W.Agt.	2nd Lieut.	Infantry
W. S. Emley	Asst. Engr.	2nd Lieut.	315th Engrs.
Charles Schlom	Clerk	2nd Lieut.	E. O. R. C.
J. H. Stanley	Clerk	2nd Lieut.	National Army
C. E. Rust	Computer	2nd Lieut.	Cavalry O. R. C.
L. F. Taylor	Clerk	2nd Lieut.	Cavalry
Ernest D. Clabaugh		2nd Lieut.	E. O. R. C.
H. E. Holt		2nd Lieut.	E. O. R. C.
R. A. Williamson		2nd Lieut.	Q. M. Corps
J. G. Blanchard		2nd Lieut.	Infantry
N. W. Bolling		2nd Lieut.	Q. M. Corps
E. B. Phillips		2nd Lieut.	E. O. R. C.
J. E. LaRue		2nd Lieut.	315th Engrs.
F. M. Shaughnessy		2nd Lieut.	Infantry
G. C. Benedict		2nd Lieut.	O. R. C.
William Oliver		2nd Lieut.	Field Artillery
R. E. Butcher	Asst. Engr.	Ensign	U. S. Navy
J. E. Carter		Ensign	U. S. Navy
D. S. Hamm		Ensign	U. S. Navy
H. S. Teague		Ensign	U. S. Navy
W. E. Henderson		Ensign	U. S. Navy

Officers who received commissions	3
Employees who received commissions	94
Number of employees volunteering or drafted	2,903
Total number of employees in government service	3,000

Atlantic Coast Line

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
V. R. King	Supt.	Major	Ord. Dept.

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
L. B. Ingram	Clerk	Captain	Infantry
Chas. D. O'Neal	Asst. C. C.	1st Lieut.	Infantry
Brantz Mayer	Tel. Maintainer	1st Lieut.	Am. Eng. Forces
Alvin C. McCall	Surgeon	1st Lieut.	M. O. R. C.
Roland S. Clinton	Surgeon	1st Lieut.	M. O. R. C.
Wm. L. Aley	Civil Engr.	1st Lieut.	U. S. Reserves
Paul L. Cantwell	Clerk	1st Lieut.	
Wm. A. Peschau	Draftsman	1st Lieut.	Engrs.
M. B. Cavenaugh	Clerk	1st Lieut.	
J. L. Galloway	Clerk	1st Lieut.	Infantry
McC. B. Wilson	Clerk	1st Lieut.	C. A. C.
Geo. E. Knox	Asst. Engr.	1st Lieut.	Engrs.
Robt. M. Marye	Res. Engr.	1st Lieut.	Artillery
I. L. Harris	Clerk	1st Lieut.	O. R. C.
S. B. Coleman	Clerk	1st Lieut.	Field Artillery
M. M. Green	Gen. Yd. Master	1st Lieut.	Engrs.
E. H. Whitaker	Clerk	2nd Lieut.	Q. M. Dept.
Wm. R. Chisholm	Clerk	2nd Lieut.	Artillery
J. Rolinson	Tel. Maintainer	2nd Lieut.	Infantry
S. B. Ives	Clerk	2nd Lieut.	Artillery
C. B. Moore	Levelman	2nd Lieut.	Engrs.
Wm. A. Marshall	Clerk	2nd Lieut.	O. R. C.
B. H. Taylor	Stenographer	2nd Lieut.	O. R. C.
P. J. Baschon	Clerk	2nd Lieut.	
C. F. Andrews	Clerk	2nd Lieut.	
J. F. Clowe	Clerk	2nd Lieut.	Infantry
Walter C. Sanders	Draftsman	2nd Lieut.	C. A. C.
H. H. Mapother, Jr.	Inspector	2nd Lieut.	305th Engrs.
Jas. E. Jeffords	Asst. Engr.	2nd Lieut.	Engrs.
W. C. Darrow	Ch. Clerk	2nd Lieut.	Infantry
H. B. Darrow	Clerk	2nd Lieut.	Infantry
S. W. Graham	Relief Agt.	2nd Lieut.	Artillery
D. A. Foster	Despatcher	2nd Lieut.	Russ. Ry. Corps
C. G. Grigg	Despatcher	2nd Lieut.	Russ. Ry. Corps
A. C. Hack	Operator	2nd Lieut.	21st Engrs.
Roy Oates Hill	Sec. to Gen. Supt.	Ensign	U. S. Navy

Officers who received commissions	1
Employees who received commissions	36
Number of employees volunteering or drafted	723
Total number of employees in government service	760

The Baltimore and Ohio

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
R. A. Grammes	Asst. Supt.	Major	Ord. Dept.
J. B. Jenkins	Val. Eng.	Major	Engr. Corps
A. H. Boyd, Jr.	Gen. Atty.	Captain	Artillery
Richard Brooke	Div. Engr.	Captain	Engr. Corps
W. L. Campbell	Supt. Pass. Serv.	1st. Lieut.	Signal Corps
C. R. Elkins	Spec. Rep. of G.M.	1st. Lieut.	Naval R. C.
J. J. McGuire	M. M.	1st. Lieut.	Engr. Corps
A. S. Bowie	Asst. Gen. Atty.	2nd Lieut.	Artillery

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
C. Edgar	Transitman	Major	Artillery
F. E. Lamphers	Asst. Eng.	Major	W. M.-O. R. C.
W. V. Shipley	Pass. Agt.	Major	Q. M. Corps
Herbert Corkran	Clerk	Captain	Q. M. Corps
J. S. Walton	Transitman	Captain	Engr. O. R. C.
W. W. Gruber	Ch. of Party	Captain	308th Engrs.
H. Craig	Roadman	Captain	Infantry
A. M. Davison	Asst. Eng. MofW.	Captain	Off. T. C.
G. F. Farlow	Asst. Eng. MofW.	Captain	Off. T. C.
T. S. Pattison	Asst. Div. Eng.	Captain	Engr. Corps
J. J. McDonough	Asst. Supt. Shops.	Captain	E. O. R. C.
Thos. Morrow	Clerk	Captain	Artillery
C. S. Roberts	Clerk	1st Lieut.	Aviation
W. C. Robinson	Clerk	1st Lieut.	Infantry
W. W. Gwathmey	Field Eng.	1st Lieut.	309th Engrs.
J. E. Burke	Field Eng.	1st Lieut.	308th Engrs.
F. G. Ash	Stenographer	1st Lieut.	Infantry
J. C. Brady	Draftsman	1st Lieut.	30th Engrs.
Thos. Hampton	Transitman	1st Lieut.	23rd Engrs.
E. K. Hebden	Ch. of Party	1st Lieut.	308th Engrs.
W. H. Briscoe	Transitman	1st Lieut.	21st Engrs.
R. E. Kennedy	Pilot Eng.	1st Lieut.	Machine Gun Bat.
Dr. Jno. F. Byrne	Asst. Med. Exam.	1st Lieut.	Med. Off. R. C.
Dr. A. E. Callaghan	Asst. Med. Exam.	1st Lieut.	Med. Off. R. C.
C. S. Woolford	Asst. Trf. Agt.	1st Lieut.	Signal Corps
A. C. Spurr	Ch. Facilities Bu.	1st Lieut.	21st Ry. Engrs.
McDevitt, Jr.	Sec. to Ind. Agt.	1st Lieut.	Aviation
E. B. Ritchie	Sec. Pass. Dept.	1st Lieut.	Infantry
A. C. VanZandt	Roadman	1st Lieut.	Ord. Dept.
H. B. Gaither	Pc. Wk. Insp.	1st Lieut.	Engr. R. C.
W. W. Baldwin	Roadman	1st Lieut.	Infantry
W. S. Hoover	Supt. Police	1st Lieut.	Infantry
J. D. Stem	Asst. Eng. MofW.	1st Lieut.	Off. T. C.
D. C. Elphinstone	Asst. Yd. Mast.	1st Lieut.	Signal Corps.
Wm. C. Robinson	Clerk	1st Lieut.	Infantry
J. R. Chambers	Clerk	1st Lieut.	Cavalry
F. M. Boyd	Tr's'man, MofW.	1st Lieut.	Off. T. C.
F. C. Mellon	Inspector	Lieut.	Infantry
Jesse Gover	Field Eng.	Lieut.	E. O. R. C.
E. B. Erickson	Draftsman	Ensign	U. S. Navy
J. D. Sullivan	Supt. Police	Ensign	U. S. Navy
R. M. VanSant, Editor, Emp'ys' Mag.		2nd Lieut.	Infantry
L. A. Smith	Levelman	2nd Lieut.	Reg. Army
P. A. Helmbold	Draftsman	2nd Lieut.	Reg. Army
F. M. Crist	Transitman	2nd Lieut.	Reg. Army
A. F. Rutter	Field Eng.	2nd Lieut.	Infantry
E. M. Hinchman	Typographer	2nd Lieut.	Nat'l Army
Geo. N. Holman	Accountant	2nd Lieut.	Infantry
Donald Wilson	Ch. of Party	2nd Lieut.	Infantry
H. T. Pfaff	Draftsman	2nd Lieut.	306th Engrs.
S. T. W. Green	Draftsman	2nd Lieut.	Engr. Corps
Asa Needham	Abstractor	2nd Lieut.	24th Engrs.
H. F. Bucher	Draftsman	2nd Lieut.	2nd Engrs.
T. C. Gerber	Typographer	2nd Lieut.	Infantry
A. J. Janushek	Pilot Engr.	2nd Lieut.	Engr. Corps
W. E. Robinson	Draftsman	2nd Lieut.	Infantry
W. C. Linthicum	Clerk	2nd Lieut.	Q. M. Corps
C. I. Kearney	Ch. Ter. Op. Bu.	2nd Lieut.	Artillery
J. Edwards	Asst. Div. Engr.	2nd Lieut.	Off. T. C.
R. I. Offutt	Machinist	2nd Lieut.	Engr. Corps
F. R. Cross	Asst. Atty.	2nd Lieut.	Artillery

Officers who received commissions	8
Employees who received commissions	61
Number of employees volunteering or drafted	1,691
Total number of employees in government service	1,760

Bangor & Aroostook

Total number of employees in government service	75

Bessemer & Lake Erie

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
O. M. Thompson	Clerk	Captain	U. S. Army
F. L. Ruffing	Cashier	1st Lieut.	U. S. Army

Employees who received commissions	2
Number of employees volunteering or drafted	220
Total number of employees in government service	222

Boston & Albany

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Dwight S. Brigham	Trainmaster	Major	Ry. Engrs.

Employees Who Received Commissions

E. P. Morrison		Capt. & Adj.	Ry. Engrs.
Robert G. Henderson		Captain	Ry. Engrs.
E. H. Smith		1st Lieut.	Ry. Engrs.
E. D. Collamer		1st Lieut.	Ry. Engrs.
George M. Trumbull		2nd Lieut.	Ry. Engrs.

Officers who received commissions	1
Employees who received commissions	5
Number of employees volunteering or drafted	289
Total number of employees in government service	295

Boston and Maine

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
B. W. Guppy	Engr. of Struc	Major	14th Engrs.

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
E. T. Sherburn	Clerk	Major	
Ralph Bradley	Insp. Fuel Serv.	Captain	14th Engrs.
F. C. Pellitier	Gen. Yardmaster	Captain	14th Engrs.
C. W. Lewis	Track Supt.	Captain	14th Engrs.
D. M. Garey	Frt. Ho. For.	Captain	Q. M. Corps
R. T. Corey	Frt. Conductor	Captain	
Frank W. Rourke	Train Despatch.	1st Lieut.	14th Engrs.
L. F. Gilson	Agent	1st Lieut.	14th Engrs.
R. W. Eckfeldt	Trav. Strkpr.	1st Lieut.	Field Artillery
O. B. Ruggles	Signal Supt.	2nd Lieut.	14th Engrs.
C. J. Ferguson	Clerk	2nd Lieut.	14th Engrs.
Robert Bowser	Trav. Agent	2nd Lieut.	Q. M. Corps
E. P. Wardden	Clerk	2nd Lieut.	Depot Brigade
A. L. Towle	Clerk	2nd Lieut.	
Wm. H. Murphy	Clerk	2nd Lieut.	
J. M. O'Neil	Clerk	2nd Lieut.	
Fred. W. Ford, Jr.	Struc. draftsman	2nd Lieut.	35th Engrs.

Officers who received commissions	1
Employees who received commissions	17
Number of employees volunteering or drafted	1,183
Total number of employees in government service	1,201

Buffalo & Susquehanna

Total number of employees in government service	2

Buffalo, Rochester & Pittsburgh

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
B. F. Barker	Clerk	Captain	Q. M. Corps
Geo. F. Ames	Clerk	Captain	Q. M. Corps
M. J. Casey	City Pass. Agt.	2nd Lieut.	Infantry

Employees who received commissons	3
Number of employees volunteering or drafted	367
Total number of employees in government service	370

Cape Girardeau Northern

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Herbert F. Wickham	Conductor	Captain	Infantry

Employees who received commissions	1
Total number of employees in government service	1

Carolina, Clinchfield & Ohio

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Frank P. McEwen	Com. Agt.	2nd Lieut.	U. S. Army
Robert M. Beak	Trav. Frt. Agt.	2nd Lieut.	U. S. Army
J. H. Hendley	Com. Agt.	2nd Lieut.	U. S. Army

Employees who received commissions	3
Number of employees volnnteering or drafted	4
Total number of employees in government service	7

Central of Georgia

Total number of employees in government service	341

Central of New Jersey

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
J. L. Borjes	Transitman	2nd Lieut.	National Guard
J. A. Hillman	Eng. Computer	2nd Lieut.	National Army
R. F. Gill	Eng. Acct.	1st Lieut.	U. S. O. R. C.
G. H. Noble	Draftsman	1st Lieut.	U. S. O. R. C.
F. McIntyre	Ch. Clerk	2nd Lieut.	U. S. Army

Employees who received commissions	5
Number of employees volunteering or drafted	647
Total number of employees in government service	652

Central Vermont

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
John T. Sullivan	Conductor	Captain	Infantry
C. S. Sumner	Foreman B. & B.	1st Lieut. & Ajt.	Infantry
C. J. Hancock		1st Lieut.	U. S. Army
L. H. Lampman	Machinst	Lieut.	Infantry
Jack B. Wood	Ch. Clerk	2nd Lieut.	Machine Gun Bat.
L. H. Cook		2nd Lieut.	U. S. Army

Employees who received commissions	6
Number of employees volunteering or drafted	64
Total number of employees in government service	70

Charleston and Western Carolina

Total number of employees in government service	12

Charlotte Harbor & Northern

Total number of employees in government service	3

Chesapeake & Ohio

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
H. C. McMillan	Ch. Clerk	Major	Army
M. S. Hewitt	Stenographer	Captain	Army
J. P. Bonner	Res. Engr.	Captain	Army
A. B. McCutchen	Asst. Yd. Master	Captain	Army
J. F. Dunn	Clerk	1st Lieut.	Army
P. T. MacKie	Ch. Clerk	1st Lieut.	Army
F. O. Renshaw	Asst. Engr.	1st Lieut.	Army
G. G. Bratt	Accountant	1st Lieut.	Army
T. Dickinson	Draftsman	2nd Lieut.	Army
J. M. Duval, Jr.	Sol. Agt.	2nd Lieut.	Army
C. O. Evans	Clerk	2nd Lieut.	Army
H. E. Featherstone	Ch. Clerk	2nd Lieut.	Army
H. P. Lovelace	Asst. to Statis.	2nd Lieut.	Army
H. S. Wright	Clerk	2nd Lieut.	Army
R. B. Bottom	Instrumentman	2nd Lieut.	Army
S. L. Davis	Instrumentman	2nd Lieut.	Army
E. W. Martin	Instrumentman	2nd Lieut.	Army
L. C. Stahl	Asst. Engr.	2nd Lieut.	Army
C. T. Holtzman	Asst. Engr.	2nd Lieut.	Army
A. R. Holderly	Rodman	2nd Lieut.	Army
W. P. Gwathney	Draftsman	2nd Lieut.	Army
E. L. Fletcher	Clerk	2nd Lieut.	Army
J. C. Billups	Engr.	Ensign	U. S. Navy

Employees who received commissions	23
Number of employees volunteering or drafted	552
Total number of employees in government service	575

The Chicago & Alton

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
H. T. Douglas, Jr.	Chief Engr.	Major	Engrs. Reserve
J. W. Reid	Bridge Engr.	Captain	Engrs. Reserve
R. A. Cook	Valuation Engr.	Captain	Engrs. Reserve
P. J. Watson, Jr.	Asst. Engr.	Captain	U. S. Army
L. V. Manspeaker	Asst. Engr.		Engrs. Reserve

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Hugh R. Johnstone	Clerk	Captain	Q. M. Corps
J. H. Christie	Statistician	Captain	Q. M. Corps
D. W. McDonald	Clerk	1st Lieut.	Aviation Corps
A. A. Helwig	Trav. Car. For.	Lieut.	Engrs. Corps
T. W. Barnard	Chief Clerk	Lieut.	Infantry
K. Means	Rodman	Lieut.	Engrs. Reserve

Officers who received commisions	6
Employees who received commissions	6
Number of employees volunteering or drafted	183
Total number of employees in government service	195

Chicago & Eastern Illinois

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
E. A. Craft	Asst. Div. Engr.	1st Lieut.	17th Ry. Regt.
W. C. Timm	Switchman	1st Lieut.	Infantry
R. T. M. Ralston	Asst. Engr.	Lieut.	Engr. Corps
C. H. Church	Asst. Engr.	Lieut.	Engr. Corps
H. R. Brinkerhoff	Clerk	2nd Lieut.	Nat'l Army
E. D. Yarco	Asst. Engr.	2nd Lieut.	17th Ry. Regt.
M. S. Cash	Clerk	2nd Lieut.	Infantry

Employees who received commissions	7
Number of employees volunteering or drafted	267
Total number of employees in government service	274

Chicago & North Western

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
E. H. Shaughnessy	Tr. Master	1st Lieut.	Ry. Regt.
E. Schultz	Master Mechanic	1st Lieut.	Ry. Regt.

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
J. E. Brandt	Rd. For. of Eng.	Colonel	Field Artillery
G. A. Holmes	Asst. Supt.	Captain	Ry. Regt.
E. L. Godsall	Conductor	Captain	Infantry
H. M. Anderson	Clerk	Captain	Nat'l Guard
Ray McMahan	Fireman	Captain	Infantry
F. L. Luth	Asst. Car For.	Captain	Field Artillery
L. W. Woodmansee	Engr.	Captain	Off. Reserve
G. B. Jensen	Fireman	Captain	Truck Co.
B. M. Lockard	Asst. Engr.	Captain	U. S. Army
T. P. Kester	Asst. Engr.	Captain	Off. Reserve
J. C. Bohan	Clerk	Captain	Field Artillery
R. M. Phinney	Asst. Sig. Engr.	1st Lieut.	Signal Corps
F. H. Lowry	Engr.	1st Lieut.	Russ. Ry. Corps
O. McGrann	B. & B. For.	1st Lieut.	Machine Gun Bat.
F. C. Miller	Engr.	1st Lieut.	Russ. Ry. Corps
W. H. Summers	Train Desp.	1st Lieut.	Russ. Ry. Corps
H. A. W. Grahm	Agt. Teleg.	1st Lieut.	Cavalry
E. H. Rategan	Co. Physician	1st Lieut.	Med. Corps
J. Sanborn	Engr.	1st Lieut.	108th Engrs.
Henry LaBrn	R. H. For.	1st Lieut.	Russ. Ry. Corps
O. J. Kendall	Instrumentman	1st Lieut.	U. S. Army
G. S. McCullough	Instrumentman	1st Lieut.	U. S. Army
G. T. Patterson	Asst. Engr.	1st Lieut.	U. S. Army

Name	Railroad Position	Military Rank	Branch of Service
W. W. Zoss, Jr.	Instrumentman	1st Lieut.	U. S. Army
E. D. Bradstreet	Cashier	1st Lieut.	France
H. F. Grobe	Clerk	1st Lieut.	Infantry
R. T. Whitney	Tie Plant For.	Ensign	U. S. Navy
K. H. Eyman	Clerk	2nd Lieut.-Adj.	Nat'l Army
W. S. Johnston	Ch. Tr. Desp.	2nd Lieut.	French Ry. Corps
C. F. Hackett	Claim Agt.	2nd Lieut.	Nat'l Army
J. J. Dugan	Tr. Desp.	2nd Lieut.	Russ. Ry. Corps
W. E. Otis	Tr. Baggageman.	2nd Lieut.	Nat'l Guard
E. L. Stewart	Inspector	2nd Lieut.	Russ. Ry. Corps
R. M. Morse	Tr. Desp.	2nd Lieut.	Russ. Ry. Corps
D. C. Smart	Teleg. Oper.	2nd Lieut.	Russ. Ry. Corps
E. M. Cooley	Engr.	2nd Lieut.	Nat'l Guard
W. H. James	R. H. For.	2nd Lieut.	R.R. Off. Corps
John W. Holt	Boilermaker For.	2nd Lieut.	Russ. Ry. Corps
J. C. Hendee	Solicit. Agt.	2nd Lieut.	Field Artillery
L. P. Jerrard	Trav. Val. Agt.	2nd Lieut.	Field Artillery
J. C. Jones	Instrumentman	2nd Lieut.	U. S. Army
F. C. Myler	Traveling Engr.	1st Lieut.	Russ. Ry. Corps
R. W. Richardson		2nd Lieut.	Russ. Ry. Corps
R. M. Stapleton		2nd Lieut.	Russ. Ry. Corps
J. N. Dungan		2nd Lieut.	Russ. Ry. Corps

Officers who received commissions	2
Employees who received commissions	45
Number of employees volunteering or drafted	1,530
Total number of employees in government service	1,573

Chicago, Burlington & Quincy

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
N. L. Howard	Supt.	Lieut.-Col.	13th Ry. Engrs.
M. F. MacLaran	Supt.	Major	Russ. Ry. Corps
J. C. Climo	M. M.	Captain	Russ. Ry. Corps
F. N. Wildish	Off. Engr.	Captain	309th Engrs. N.A.
J. D. Farrington	Asst. Supt.	1st Lieut.	7th Engrs.
S. O. Wilkinson	Asst. Supt.	1st Lieut.	Russ. Ry. Corps
F. E. Haines	Asst. Supt.	1st Lieut.	Russ. Ry. Corps
C. W. Breed	Off. Engr.	1st Lieut.	24th Engrs. N. A.
T. H. Clark	Off. Engr.	2nd Lieut.	Q. M. Corps N. A.

Employees Who Received Commissions

A. E. Woody	Test Car For.	Captain	Ord. Dept.
E. J. McGrail	Ch. Clerk	Captain	13th Engrs.
J. B. Roach	Loco. Engr.	Captain	Russ. Ry. Corps
Warner Harwood	Computer	1st Lieut.	
A. S. Karkow	Designer	1st Lieut.	
M. I. Lippitt	Asst. Engr.	1st Lieut.	
J. N. Schufrieder	Asst. Engr.	1st Lieut.	108th Engrs.
M. P. Taylor	Asst. Engr.	1st Lieut.	
Geo. Law	Safety Insp.	1st Lieut.	Russ. Ry. Corps
R. C. Wells	Conductor	1st Lieut.	Russ. Ry. Corps
F. B. Leonard	Ch. Desp.	1st Lieut.	Russ. Ry. Corps
G. L. Lawrence	Asst. Engr.	2nd Lieut.	Field Artillery
W. D. Meredith	Asst. For.	2nd Lieut.	Russ. Ry. Corps
E. E. Olson	Trick Desp.	2nd Lieut.	Russ. Ry. Corps
E. J. Supple	Trick Desp.	2nd Lieut.	Russ. Ry. Corps
H. G. Anderson	Trick Desp.	2nd Lieut.	Russ. Ry. Corps
Roy Abbott	Trick Desp.	2nd Lieut.	Russ. Ry. Corps
J. S. McManus	Trick Desp.	2nd Lieut.	Russ. Ry. Corps
O. A. French	Trick Desp.	2nd Lieut.	Russ. Ry. Corps
G. M. Sage	Ch. Clerk	2nd Lieut.	Russ. Ry. Corps
F. W. Swartzcope	R. H. For.	2nd Lieut.	Russ. Ry. Corps
A. A. Waldhaus	Asst. R. H. For.	2nd Lieut.	Russ. Ry. Corps
W. Meredith	Draftsman	2nd Lieut.	Russ. Ry. Corps

Officers who received commissions	9
Employees who received commissions	23
Number of employees volunteering or drafted	1,454
Total number of employees in government service	1,486

Chicago Great Western

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
S. V. Rowland	Asst. Supt.	1st Lieut.	13th Ry. Engrs.
E. E. Stoup	Trainmaster	Captain	13th Ry Engrs.
E. R. Reynolds	Gen. Bagg. Agt.	Captain	Infantry
T. W. Fatherson	Engr. M. of W.	Capt.-Adj.	Hds. 13th Ry. Egs.
R. W. LeBaron	Examiner Jt. Fac.	1st Lieut.	13th Ry Engrs.
F. R. Blunt	Div. Supt.	Major	Russ. Ry. Corps

Employees Who Received Commissions

A. M. Eaton	Ch. Yard Clerk.	Captain	Infantry
A. E. Jones	Foreman	2nd Lieut.	Russ. Ry. Corps
E. F. Brunner	Machinist	2nd Lieut.	Russ. Ry. Corps
E. E. Deyo	Gen. Yardmaster	2nd Lieut.	13th Ry. Engrs.
Peyton Winlock	Car Clerk	2nd Lieut.	Field Artillery
F. E. Mariman	Tie Inspector	2nd Lieut.	Engrs. Reserve

Officers who received commissions	6
Employees who received commissions	6
Number of employees volunteering or drafted	294
Total number of employees in government service	306

Chicago, Indianapolis & Louisville

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
E. M. Graham	Sig. Insp.	Captain	
A. H. Yarrell	Asst. Engr.	1st Lieut.	
Geo. K. Batt	Clerk	Lieut.	Field Artillery
Arnold Shircliffe	Supt. Din. Cars.	2nd Lieut.	112th Engrs.

Employees who received commissions	4
Number of employees volunteering or drafted	119
Total number of employees in government service	123

Chicago, Milwaukee & St. Paul

(Incomplete)

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
A. C. Peterson	Div. Supt.	Major	
C. L. Whiting	Div. Supt.	Major	
G. M. Rice	Div. Engr.	Major	
Alex. Young	Dist. M. M.	Captain	

Employees Who Received Commissions

D. C. Rhynsburger	Asst. Engr.	Captain-Adj.	
O. C. Anderson	Tr. Desp.	Captain	Russ. Ry. Corps
F. Buchanan	Trav. Engr.	Captain	Russ. Ry. Corps
D. C. Fenstermaker	Asst. Engr.	Captain	
J. F. Kittinger	Conductor	Captain	Russ. Ry. Corps
C. U. Smith	Asst. Engr.	Captain	
F. W. Sawtelle	Rod. Master	Lieut.	
C. H. Poole	Asst. Engr.	Lieut.	
W. H. Knapp	Asst. Engr.	Lieut.	
Jesse T. Osborn	Asst. Engr.	Lieut.	
P. R. Elfstrom	Asst. Engr.	Lieut.	
C. E. Schaft	Tr. Desp.	Lieut.	Russ. Ry. Corps
M. H. Keogh	Tr. Desp.	Lieut.	Russ. Ry. Corps
J. J. Brown	Tr. Desp.	Lieut.	Russ. Ry. Corps
F. E. Brunner	Tr. Desp.	Lieut.	Russ. Ry. Corps
G. M. Hayden	Tr. Desp.	Lieut.	Russ. Ry. Corps
L. V. Curren	Tr. Desp.	Lieut.	Russ. Ry. Corps
W. G. Long	Lineman	Lieut.	Russ. Ry. Corps
Geo. Lusk	Engr.	Lieut.	Russ. Ry. Corps
A. S. Merz	Engr.	Lieut.	Russ. Ry. Corps

Officers who received commissions	4
Employees who received commissions	20
Number of employees volunteering or drafted	1,621
Total number of employees in government service	1,645

Chicago, Peoria & St. Louis

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
E. A. Froyd	Chief Engr.	Captain	Infantry

Officers who received commissions	1
Number of employees volunteering or drafted	27
Total number of employees in government service	28

Chicago, Rock Island & Pacific

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
N. D. Ballantine	Asst. to V. P.	Major	Sig. Dept., U.S.A.
S. C. Plummer	Ch. Surgeon	Major	Med. Res. Corps
H. S. Ray	Asst. G. P. Agt.	Captain	Q. M., O. R. C.
C. H. Caswell	Gen. Agt. Frt. Dep.	Captain	Q. M., O. R. C.
C. C. Cunningham	Div. Engr.		O. R. C.
A. C. Bradley	Div. Engr.	Captain	U. S. Engrs.
V. H. Hagelbarger	Tr. Master	Captain	3rd Res. Engrs.
P. Hevener	Supt. Insurance.	1st Lieut.	National Army

Employees Who Received Commissions

B. C. Allin	Special Compiler.	Captain	1st Engrs.
L. J. Hughes	Asst. Engr.	1st. Lieut.	Illinois Engrs.
F. A. Parker	Ch. Desp.	1st Lieut.	3rd Res. Engrs.
S. Mueller	Foreman	1st Lieut.	3rd Res. Engrs.
W. L. Croxton	Despatcher	1st Lieut.	Russ. Ry. Corps
T. F. Phelan	Rd. For. Equip.	1st Lieut.	Russ. Ry. Corps
P. Eck	Boiler For.	1st Lieut.	Russ. Ry. Corps
H. Schlemmer	Loco. Engr.	1st Lieut.	National Army
R. O. Martin	Clerk	1st Lieut.	National Army
J. G. Roberts	Fuel Inspector	2nd Lieut.	National Army
H. Tatum	Gen. For.	2nd Lieut.	Russ. Ry. Corps.
W. E. Haberlaw	Rd. Master	2nd Lieut.	3rd Res. Engrs.
W. P. McGuire	Insurance Insp.	2nd Lieut.	Engrs. O. R. C.
C. D. Hibbs	Despatcher	2nd Lieut.	Russ. Ry. Corps
T. L. Wilson	Despatcher	2nd Lieut.	Russ. Ry. Corps
R. A. Moore	Despatcher	2nd Lieut.	Russ. Ry. Corps
G. D. Sewell	Line For.	2nd Lieut.	Russ. Ry. Corps
J. R. Jones	Engr.	2nd Lieut.	Russ. Ry. Corps

Officers who received commissions	8
Employees who received commssions	18
Number of employees volunteering or drafted	1,431
Total number of employees in government service	1,457

Chicago, St. Paul, Minneapolis & Omaha

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
G. W. Tower	Asst. Supt.	Major	Russ. Ry. Corps
C. R. Tompkins	Trainmaster	Captain	Russ. Ry. Corps

Employees Who Received Commissions

J. E. Bartosic	Train Desp.	Lieut.	Russ. Ry. Corps
E. M. Hurlburt	Clerk	2nd Lieut.	Infantry
A. K. Wheaton	Warehouseman	1st Lieut.	Infantry
T. D. Sterling	Asst. Engr.	Captain	5th Engrs.
G. R. McGinty	Train Desp.	Lieut.	Russ. Ry. Corps
W. Y. Burton	Shop For.	Lieut.-Col.	Infantry
Andy Lystad	Tinner	Captain	Infantry
A. J. Lyksett	Painter	2nd Lieut.	Infantry
A. E. Anderson	Buyer	Captain	Infantry
F. E. Fuhrman	Ch. Train Desp.	Lieut.	Russ. Ry. Corps
C. T. Spear	Agent	Major	Russ. Ry. Corps
L. O. Thompson	Ticket Clerk	2nd Lieut.	U. S. A.
H. A. Enockson	R. H. Foreman.	Captain	Russ. Ry. Corps
Chas. N. Larson	Trav. Engr.	Lieut.	Russ. Ry. Corps
C. J. Mattison	Loco. Engr.	Lieut.	Russ. Ry. Corps

Name	Railroad Position	Military Rank	Branch of Service
Wm. G. Kuhfeld	R. H. Foreman	Lieut.	Russ. Ry. Corps
C. H. Sorenson	Machinist	Lieut.	Russ. Ry. Corps
J. V. Matthews	Asst. B. M. For.	Lieut.	Russ. Ry. Corps
Evert S. Peters	Asst. B. M. For.	Lieut.	Russ. Ry. Corps
M. S. VanDresar	Boilermaker	Lieut.	Russ. Ry. Corps
Peter Copeland	Engr.	Lieut.	Russ. Ry. Corps
Fred A. Dietz	Fireman	Lieut.	National Army
H. S. Bronson	Draftsman	2nd Lieut.	E. O. R. C.
F. C. Fitzgerald	Rodman	2nd Lieut.	Engrs. O. R. C.
H. E. Lamb	Chief Dispr.	Lieut.	Russ. Ry. Corps
F. B. Byers		Lieut.	Russ. Ry. Corps
J. W. Ryan		Lieut.	Russ. Ry. Corps
R. L. Rodgers		Lieut.	Russ. Ry. Corps
J. M. Dugan		Lieut.	Russ. Ry. Corps
W. W. Giesse		Lieut.	Russ. Ry. Corps

Officers who received commissions	2
Employees who received commissions	30
Number of employees volunteering or drafted	339
Total number of employees in government service	371

Chicago, Terre Haute & Southeastern

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
C. V. Link	Asst. Supt.	Captain	
F. A. Leith	Supt.	1st Lieut.	

Total number of employees in government service..... 2

Cincinnati, Indianapolis & Western

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
James G. Moore	Secretary	2nd Lieut.	Q. M. Corps

Officers who received commissions	1
Number of employees volunteering or drafted	51
Total number of employees in government service	52

Cincinnati Northern

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Arthur Berthold	Roundhouse Man.	1st Lieut.	

Employees who received commissions	1
Number of employees volunteering or drafted	29
Total number of employees in government service	30

The Cleveland, Cincinnati, Chicago & St. Louis

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
N. R. Markle	Com. Agt.	Captain	Q. M. R. C.
C. F. Hinchman	Engr. M. of W.	1st Lieut.	U. S. Army

Employees Who Received Commissions

J. T. Kingsley	Frav. Frt. Agt.	Captain	Q. M. U. S. R.
O. C. Wyman	Despatcher	Captain	
J. V. Biggert	Agent	Captain	
C. E. Trotter		1st Lieut.	
Marley Maguire	Conductor	1st Lieut.	
Ray C. Norton		2nd Lieut.	
C. J. Derrick	Engr. Corps	2nd Lieut.	

Officers who received commissions	2
Employees who received commissions	7
Number of employees volunteering or drafted	690
Total number of employees in government service	699

Colorado & Southern

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
George C. Randall	Supt. Tranptn.	Captain	Q. M. O. R. C.
S. E. Willis	Tr. Master	1st Lieut.	O. R. C.

Officers who received commissions	2
Number of employees volunteering or drafted	81
Total number of employees in government service	83

Colorado, Wyoming & Eastern

Total number of employees in government service..... 1

Colorado Midland

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
N. B. Wood	Sol. Frt. & Pass. Agt.	1st Lieut.	132nd Regt., Co. F

Employees who received commissions	1
Number of employees volunteering or drafted	16
Total number of employees in government service	17

Copper River & Northwestern

Total number of employees in government service..... 5

Cripple Creek & Colorado Springs

Total number of employees in Government service..... 6

Cumberland & Pennsylvania

Total number of employees in government service..... 8

Cumberland Valley

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
M. C. Kennedy	President	Colonel	Transptn. Service Am. Exp. Force

Employees Who Received Commissions

Edwin F. Snider	Transitman	1st Lieut.	O. R. C.
Cyrus W. Boardman	Clerk	1st Lieut.	O. R. C.
Harold C. VanRiper	Draftsman	2nd Lieut.	O. R. C.
J. Donald Martin	Clerk	2nd Lieut.	O. R. C.

Officers who received commissions	1
Employees who received commissions	4
Number of employees volunteering or drafted	65
Total number of employees in government service	70

Delaware & Hudson

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
J. T. Loree	Gen. Mgr.	Major	Hdqrs.
I. A. McGrew	Superintendent	Major	Q. M. C.
M. J. Powers	Gen. Pass. Agt.	Captain	Q. M. C.

Employees Who Received Commissions

Fred Thiessen	Chairman	Captain	Infantry
Lewis M. Saxton	Clerk	1st Lieut.	Ordnance Dept.
Frank G. Roddy	Clerk	1st Lieut.	Infantry
Wm. Root	Asst. Engr.	2nd Lieut.	Infantry
J. W. Carpenter	Levelman	2nd Lieut.	
G. H. Hewitt	Clerk	2nd Lieut.	Vet. Surgeon
E. S. Stroughton	Telegrapher	2nd Lieut.	Infantry

Officers who received commissions	3
Employees who received commissions	7
Number of employees volunteering or drafted	444
Total number of employees in government service	454

Delaware, Lackawanna & Western

Engineering Department

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Robert L. Tate	Asst. Engr.	1st Lieut.	
Harry K. Wilson	Draftsman	1st Lieut.	Engr. Reserve

Employees who received commissions	2
Number of employees volunteering or drafted	86
Total number of employees in government service	88

Denver & Rio Grande

Total number of employees in government service..... 249

Detroit & Mackinac

Total number of employees in government service..... 6

El Paso & Southwestern

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
J. P. Nash	Supt. of Term.	Captain	Engr. Corps

Employees Who Received Commissions

W. W. Windham	Agent	Captain	Supply Train
J. M. Curtiss	Clerk	Captain	
Garwood Lyman	Draftsman	2nd Lieut.	

Officers who received commissions	1
Employees who received commissions	3
Number of employees volunteering or drafted	147
Total number of employees in government service	151

Erie

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
P. J. Shaughnessy	Str. Kpr.	Major	Commis. Dept.
F. G. Robbins	Gen. Supt.	Major	E. O. R. C.
C. E. King	Gen. Agt.	2nd Lieut.	Q. M. Corps
A. B. Hoff	Indust. Com.	Cable Censor	U. S. Navy

Employees Who Received Commissions

A. L. Moorshead		Major	
H. F. Miller		Captain	
C. E. Correll		Captain	
T. R. Patton		Captain	
John Thorpe	Engr. Tests	Captain	Aviation Corps
W. J. Norris		1st Lieut.	
C. R. Smith	Supervisor	1st Lieut.	O. R. T. C.
Geo. Bloomquist	Clerk	1st Lieut.	Cavalry
F. D. Roberts		1st Lieut.	
O. D. Dyer		1st Lieut.	
R. S. Shreve		Lieut.	
C. P. Moore		Lieut.	
T. J. Allen	Asst. Engr.	Lieut.	O. R. T. C.
W. V. Hill		Lieut.	O. R. T. C.
A. S. Hathaway	Res. Engr.	2nd Lieut.	305th Engrs.

Name	Railroad Position	Military Rank	Branch of Service
Thomas J. Jackson		2nd Lieut.	165th U. S.
C. H. K. Riley		2nd Lieut.	
Walter W. Linzel		2nd Lieut.	Q. M. Corps
W. A. Frazer		2nd Lieut.	
Chas. M. Colyer		2nd Lieut.	
Vincent B. Moore		2nd Lieut.	

Officers who received commissions	4
Employees who received commissions	22
Number of employees volunteering or drafted	1,349
Total number of employees in government service	1,375

Escanaba & Lake Superior

Total number of employees in government service..... 4

Evansville & Indianapolis

Total number of employees in government service..... 15

Ft. Dodge, Des Moines & Southern

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
C. E. Carson	Supt.	Captain-Adj.	Engr. Corps

Officers who received commissions	1
Number of employees volunteering or drafted	17
Total number of employees in government service	18

Georgia Railroad

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
A. D. Nicholson	Trav. Tariff Insp.	Captain	U. S. Reserves
G. C. McKinley	Clerk	Lieutenant	U. S. Reserves
F. S. Kagle	Agent	Lieutenant	U. S. Reserves
A. J. Bindewald	Secy. to G. F. A.	Lieutenant	U. S. Reserves
R. K. Jeter	Clerk	Lieutenant	
W. M. Robinson, Jr.	Asst. Val. Engr.	Lieutenant	U. S. Reserves

Employees who received commissions	6

Georgia & Florida

Total number of employees in government service..... 4

Georgia, Florida & Alabama

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
W. W. Wright	Asst. Div. Coun.	1st Lieut.	Infantry

Officers who received commissions	1
Number of employees volunteering or drafted	6
Total number of employees in government service	7

Georgia Southern & Florida

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
J. W. White	Com. Agt.	Captain	
C. R. Dickinson	Sol. Frt. Agt.	1st Lieut.	
J. M. Cutler, Jr.	City Ticket Agt.	2nd Lieut.	

Employees who received commissions	3
Number of employees volunteering or drafted	60
Total number of employees in government service	63

Great Northern

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
G. H. Emerson	Gen. Mgr.	Colonel	Rus. Ry. Corps
G. S. Stewart	Gen. Supt.	Lieut. Colonel	Rus. Ry. Corps
R. D. Hawkins	Supt. of M. P.	Lieut. Colonel	Rus. Ry. Corps
E. B. Morden	Supt. of Constr.	Major	Q. M. O. R. C.
J. H. Carroll, Jr.	Gen. Agt.	2nd Lieut.	Ry. Engrs.
J. C. Benson	Mast. Mech.	Captain	Rus. Ry. Corps

Employees Who Received Commissions

Millard A. Butler	Civil Engr.	Major	Q. M. Corps
J. A. McGlogan	Asst. Supt. Tel.	Major	Russian Ry. Corp.
Walter J. Bennett	Asst. Engr.	Captain	U. S. Engrs.
F. A. Dupuis	Clerk	1st Lieut.	Infantry
M. V. Fortier	Tariff Insp.	1st Lieut.	Infantry
Lawrence Solon	Tariff Insp.	1st Lieut.	Infantry
Walter L. Lewis	Draftsman	1st Lieut.	Field Artillery
Franklin O. Rose	Rodman	1st Lieut.	U. S. R. Engrs.
W. C. Sadler	Inst. Man	1st Lieut.	18th Ry. Engrs.
Walter K. Tanner	Asst. Engr.	1st Lieut.	U. S. R. Engrs.
Vincent Syliaasen	Rodman	1st Lieut.	U. S. R. Engrs.
Wm. B. Upton	Inspector	2nd Lieut.	U. S. R. Engrs.
Ray. C. Kellerman	Draftsman	2nd Lieut.	Q. M. Corps
Bernard P. Hoey	Clerk	2nd Lieut.	Infantry
Robert Boynton	Draftsman	2nd Lieut.	Infantry
W. T. Middlebrook	Trav. Frt. Agt.	2nd Lieut.	Q. M. Corps
Lyle D. Tucker	Clerk	2nd Lieut.	Q. M. Corps

Officers who received commissions	6
Employees who received commisions	17

Great Bay & Western

Total number of employees in government service..... 22

Gulf, Florida & Alabama

Total number of employees in government service..... 40

Elgin, Joliet & Eastern

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Chas. R. Woods	Land Appraiser	2nd Lieut.	E. O. R. C.
Otto E. Lindgren	Clerk	Adj.-Lieut.	National Guard

Employees who received commissions	2
Number of employees volunteering or drafted	317
Total number of employees in government service	319

Gulf, Mobile & Northern

Total number of employees in government service..... 67

Gulf, Texas & Western

Total number of employees in government service..... 5

Illinois Central System

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
C. L. Bent	Insp. Service	Major	
W. G. Arn	Ast. Eng. MofW.	Captain	
J. M. Walsh	Term. Supt.	Captain	
W. M. Vandersluis	Sig. Eng.	Captain	

Employees Who Received Commissions

Dr. Battle Malone	Div. Surgeon	Major	
Dr. J. J. Robert	Dist. Surgeon	Major	
G. Wildes	Agent	Captain	
W. H. Wilson	Gen. Y'dmaster	Captain	
R. L. Montgomery	Agent	Captain	
F. P. Varnado	Brakeman	Captain	
S. C. Jump	Asst. Engr.	Captain	
J. M. Farrin	Asst. Engr.	Captain	
C. G. Bryan	Asst. Engr.	Captain	
C. F. Fauntz	Asst. Engr.	Captain	
J. W. Moore	Asst. Engr.	Captain	
A. W. Whaler	Asst. Engr.	Captain	
S. M. Sherman	Chief Draftsman	Captain	
Dr. H. Luten	Dist. Surgeon	Captain	
Dr. J. W. Barksdale	Dist. Surgeon	Captain	
Dr. I. L. Parsons	Dist. Surgeon	Captain	
Dr. F. T. Fort	Dist. Surgeon	Captain	
Dr. L. A. Ensminger	Dist. Surgeon	Captain	
Dr. J. P. Lord	Dist. Surgeon	Captain	
Geo. T. Sheehan	Yd. Master	1st Lieut.	
O. B. Quin	Timekeeper	1st Lieut.	
E. W. Romberger	Timekeeper	1st Lieut.	
R. W. Sanders	Clerk-Supr.	1st Lieut.	
F. P. Nash	Gen. Foreman	1st Lieut.	
R. F. Dusenberry	Brakeman	1st Lieut.	
G. M. Anderton	Asst. Engr.	1st Lieut.	
A. King	Asst. Engr.	1st Lieut.	
E. J. Stephenson	Draftsman	1st Lieut.	
A. C. Cox	Draftsman	1st Lieut.	
F. A. Stone	Draftsman	1st Lieut.	
E. R. Roll	Draftsman	1st Lieut.	
J. Clabby	Draftsman	1st Lieut.	
E. W. Bullard	Bldg. Insp.	1st Lieut.	
W. B. Meisenhelder	Computer	1st Lieut.	
O. H. Wainscott	Clerk	1st Lieut.	
Dr. John S. McAtee	Dist. Surgeon	Lieut.	
Dr. E. G. Thompson	Dist. Surgeon	Lieut.	
Dr. M. Etherton	Dist. Surgeon	Lieut.	
J. A. Hitton	Engine For.	2nd Lieut.	
C. F. Kratz	Timekeeper	2nd Lieut.	
H. S. Goldman	Draftsman	2nd Lieut.	
F. L. Phipps	Draftsman	2nd Lieut.	
E. M. Bandli	Draftsman	2nd Lieut.	
C. Van Gundy	Draftsman	2nd Lieut.	
T. W. Kern, Jr.	Gen. Foreman	2nd Lieut.	
S. B. Christopher	Resident Engr.	2nd Lieut.	
L. S. Dillon	Masonry Insp.	2nd Lieut.	
W. J. Apperson	Masonry Insp.	2nd Lieut.	
E. B. Styles	Masonry Insp.	2nd Lieut.	
L. W. Warfel	Computer	2nd Lieut.	
J. E. Donker	Car Repairer	2nd Lieut.	
J. R. Blanchflower	Travel. Aud.	2nd Lieut.	
T. D. McGee	Claim Agent	2nd Lieut.	
W. B. Livingston	Claim Agent	2nd Lieut.	
Geo. S. Michinard	Clerk	2nd Lieut.	

Officers who received commissions	2
Employees who received commissions	55
Number of employees volunteering or drafted	1,857
Total number of employees in government service	1,916

International & Great Northern

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
H. C. Dinkins	Gen. Agt.	Captain	Q. M. Corps
A. D. Pinkerton	Com. Agt.	2nd Lieut.	G. M. Dept.

Employees Who Received Commissions

J. W. King	Div. Frt. Agt.	Captain	Q. M. Corps
Geo. B. Fuller	Ch. Tr. Aud.	Captain	Q. M. Corps
Chas. R. Stewart	Brakeman	Captain	Infantry
Harry V. Fletcher	Draftsman	1st Lieut.	
Louis R. Dallam	Sol. Frt. Agt.	1st Lieut.	Infantry
B. B. Brown	Secy. to G. M.	2nd Lieut.	Q. M. Corps
H. F. Hoffmaster, Jr.	Clerk	2nd Lieut.	Q. M. Corps

Officers who received commissions	2
Employees who received commissions	7
Number of employees volunteering or drafted	153
Total number of employees in government service	162

Kanawha & Michigan

Total number of employees in government service..... 34

Kansas City Northwestern

Total number of employees in government service..... 3

Kansas City Southern

Total number of employees in government service..... 135

Lake Erie & Western

EMPLOYEES WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
E. E. Spenner	Claim Agt.	1st Lieut.	Aviation Corps
H. B. Lumley	Despatcher	1st Lieut.	Russ. Ry. Corps
A. W. Stradling	Fireman	1st Lieut.	
R. O. Edwards	Tel. Oper.	1st Lieut.	Anti-Airc'ft Art.

Employees who received commissions	4
Number of employees volunteering or drafted	129
Total number of employees in government service	133

Lehigh & New England

Total number of employees in government service..... 22

Long Island

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
J. A. McCrea	Gen. Mgr.	Colonel	Engr. Corps O. R. C.
A. B. Bierck	Gen. Auditor	Special Asst.	Am. Red Cross Fr.

EMPLOYEES WHO RECEIVED COMMISSIONS

Frank H. Foster	Gen. Foreman of Substations	Lieutenant	
John W. Mark	Subst. Sys. Oper.	Captain	Army
Harry S. Best	Foreman Substation Dept.	Captain	
Edward J. Kiely, Jr.	Elec. Inspector	Lieutenant	
John M. Dempsey	Draughtsman	Lieutenant	Navy

Officers who received commissions	2
Employees who received commissions	5
Number of employees volunteering or drafted	272
Total number of employees in government service	279

Los Angeles & Salt Lake

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
Dr. Guy Cochran	Ch. Surgeon	Lieutenant	Navy

EMPLOYEES WHO RECEIVED COMMISSIONS

E. W. Gilliland	Clerk	1st Lieut.	U. S. Army
M. E. Thompson	Asst. Engr.	1st Lieut.	U. S. Army
J. H. Childs	Asst. Engr.	1st Lieut.	U. S. Army
W. E. Jessup	Instman	1st Lieut.	U. S. Army
J. S. Hunter	Clerk	2nd Lieut.	U. S. Army
J. G. Howell	Clerk	2nd Lieut.	U. S. Army
W. Rawn	Instman	2nd Lieut.	U. S. Army

Officers who received commissions	1
Employees who received commissions	7
Number of employees volunteering or drafted	108
Total number of employees in government service	116

Louisiana & Arkansas

OFFICERS WHO RECEIVED COMMISSIONS

Name	Position Railroad	Military Rank	Branch of Service
R. P. Albaugh	Supt.	1st Lieut.	12th Ry. Engrs.

EMPLOYEES WHO RECEIVED COMMISSIONS

H. White	Ast. Engr.	1st Lieut.	Engr. O. R. C.

Officers who received commissions	1
Employees who received commissions	1
Number of employees volunteering or drafted	38
Total number of employees in government service	40

Louisiana & North West

EMPLOYEES WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
H. S. Ford	Clerk	Captain	
A. O. Ford	Clerk	1st Lieut.	Q. M. Corps

Employees who received commissions	2
Number of employees volunteering or drafted	16
Total number of employees in government service	18

Louisiana Railway & Navigation Company

Total number of employees in government service..... 60

Louisville & Nashville

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Service Branch of
W. A. Colstron	Gen. Solicitor	Colonel	Artillery
Franz A. Busse	Bridge Engr.	Captain	
Louis R. Muhs	Asst. Bridge Engr.	Captain	
Leon L. Morton	Asst. Engineer	Captain	
L. L. Adams	Asst. Engineer	1st Lieut.	
H. A. Washington	Asst. Engineer	1st Lieut.	

EMPLOYEES WHO RECEIVED COMMISSIONS

B. G. Shoemaker	Asst. Claim Clerk	Captain	
M. B. Brodie	Clerk	Captain	
Geo. R. Ewald	Sec. to Gen. Atty.	1st Lieut.	
C. D. Pierce	Clerk	1st Lieut.	
A. C. Pickells	Clerk	1st Lieut.	
Chas. D. Walters	Clerk	1st Lieut.	
J. A. Mefford	Instrumentman	1st Lieut.	
C. W. Bailey	Station Agent	2nd Lieut.	
J. W. Gaines	Clerk	2nd Lieut.	
Glen S. Finley	Machinist	2nd Lieut.	
L. P. Whitaker	Stenographer	2nd Lieut.	
Henry W. Willen	Stenographer	2nd Lieut.	
R. F. Curran	Tariff Clerk	2nd Lieut.	
I. S. Dierking	Mail Clerk	2nd Lieut.	
Clark Dunn	Trav. Pass. Agt.	2nd Lieut.	
G. B. Jeffries	Draftsman	Lieut.	
F. H. Kornfeld	Draftsman	Lieut.	
C. H. Owens	Draftsman	Lieut.	
R. W. Coward	Draftsman	Lieut.	
R. W. Hunter	Valuation Pilot	Lieut.	
R. E. Finnegan	Clerk	Lieut.	
W. W. Stickrod	Telegraph Op'tor.	Lieut.	
R. W. Ogden	Telegraph Op'tor.	Lieut.	
J. D. Everett	Switchman	Lieut.	

Officers who received commissions	6
Employees who received commissions	24
Number of employees volunteering or drafted	1,380
Total number of employees in government service	1,410

Maine Central

EMPLOYEES WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
Clinton A. Plumly	Asst. Engr.	Captain	U. S. Navy
W. L. Post	Asst. Engr.	Captain	14th Engrs.
R. Sturgeon	Loco. Engr.	1st Lieut.	Army Engr. Cps.
D. E. Hayes	Train Despr.	1st Lieut.	14th Engrs.
B. B. Whitney	Asst. Rd. Master.	2nd Lieut.	Col.'s Stf. C.A.C.
G. L. Carter	Clerk	1st Lieut.	14th Engrs.
Granville Gray	Clerk	1st Lieut.	Army Engrs.
P. Judson, Jr.	Asst. Engr.	2nd Lieut.	U. S. Navy
Harold Davis	Clerk	Asst. Paymaster	Maine Natl' Grd.
J. H. Marks	Asst. Engr.	Lieut.	14th Engrs.

Employees who received commissions	10
Number of employees volunteering or drafted	242
Total number of employees in government service	252

Manistee & North-Eastern

Total number of employees in government service..... 7

Michigan Central

OFFICERS WHO RECEIVED COMMISSIONS

Name	Position Railroad	Military Rank	Branch of Service
Raymond K. Dykema	Attorney	Lieut.	Stat. Div. N. A.
George H. Webb	Ch. Engr.	Lieut.-Col.	16th Engrs.

EMPLOYEES WHO RECEIVED COMMISSIONS

B. F. Pontey	Engr. Dept.	Lieut.	16th Engrs.
Chas. G. Williamson	Engr. Dept.	Lieut.	16th Engrs.
L. J. Armstrong	Div. Engr's Office	1st Lieut.	Infantry
Herbert C. Smith	Auditor of Disbursements	2nd Lieut.	O. R. C.

Officers who received commissions	2
Employees who received commissions	4
Number of employees volunteering or drafted	545
Total number of employees in government service	551

Midland Valley

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
J. G. Miller	Gen. Agt.		Russ. Ry. Corps

Officers who received commissions	1
Number of employees volunteering or drafted	11
Total number of employees in government service	12

Minneapolis, St. Paul & Sault Sainte Marie

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
James Casey	Master Mechanic.	Major	Russ. Ry. Sv. Cps.
C. M. Winter	Supt. So. Dist.	Captain	Russ. Ry. Sv. Cps.

EMPLOYEES WHO RECEIVED COMMISSIONS

W. B. Boyce	Ch. Tr. Desp.	1st Lieut.	
C. E. Meeker	Conductor	1st Lieut.	
Wm. Piggot	Conductor	1st Lieut.	
F. M. Roberts	Trav. Engr.	1st Lieut.	
C. A. Bauers	R. H. For.	2nd Lieut.	

Name	Railroad Position	Military Rank	Branch of Service
A. G. Greenseth	R. H. For.	2nd Lieut.	
G. P. Hinton	Tr. Desp.	2nd Lieut.	
F. S. Patton	Machinist	2nd Lieut.	
W. C. Praiss	Engineer	2nd Lieut.	
T. J. Bowan	Tr. Desp.	2nd Lieut.	
E. J. Stimm	Tr. Desp.	2nd Lieut.	
Bert Williams	Line Repairer	2nd Lieut.	

Officers who received commissions	2
Employees who received commissions	12
Number of employees volunteering or drafted	460
Total number of employees in government service	474

Missouri, Kansas & Texas

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
E. V. McGinnis		Lieut.	Infantry
R. C. Meek		Lieut.	
W. B. Pittman		2nd Lieut.	
J. F. Hennessey		2nd Lieut.	

Employees who received commissions	4
Number of employees volunteering or drafted	76
Total number of employees in government service	80

Mobile & Ohio

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
H. Austill	Bridge Engr.	Captain	20th Engr.

Employees Who Received Commissions

Woolsey Finnell	Val. Engr.	Major	20th Engrs.
L. M. Pill	Val. Engr.	Captain	Engrs. Reserve
F. E. Dubois	Clerk	Captain	Ord. Dept.
Vester J. Thompson	Secy. to V. P.	Capt.-Adj.	Infantry
J. V. Johnston	Val. Dept.	1st Lieut.	20th Engrs.
J. T. Morre	Clerk	1st Lieut.	O. R. C.
A. P. Reasonover	Clerk	1st Lieut.	Infantry
Ernest H. Buck	Clerk	2nd Lieut.	Infantry
R. E. Williams	Clerk	2nd Lieut.	O. R. C.

Officers who received commissions	1
Employees who received commissions	9
Number of employees volunteering or drafted	140
Total number of employees in government service	150

Monongahela

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
H. M. Crawford	Supr.	Captain	Engr. Reserve
E. L. Clemmer	Transitman	Captain	Engr. Reserve

Employees who received commissions	2
Number of employees volunteering or drafted	24
Total number of employees in government service	26

New Orleans Great Northern

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Jos. W. Vaughn	Fireman	Lieutenant	Army
Herbert H. Lester	Asst. Engr.	Lieutenant	U. S. Reserves

Employees who received commissions	2
Number of employees volunteering or drafted	28
Total number of employees in government service	30

New York Central Railroad

Employees Who Received Commissions

(Incomplete)

Name	Railroad Position	Military Rank	Branch of Service
D. W. Smith	Asst. Engr.	Captain	E. O. R. C.
R. H. Erwin	Asst. Engr.	Captain	O. M. R. C.
D. Beerbower	Asst. Engr.	1st Lieut.	E. O. R. C.
J. H. Roper	Clerk	1st Lieut.	E. O. R. C.
C. K. Koppes	Asst. Engr.	Captain	E. O. R. C.
C. A. Clark	Clerk	2nd Lieut.	E. O. R. C.

Employees who received commissions	6
Number of employees volunteering or drafted	4,972
Total number of employees in government service	4,978

New York, Chicago & St. Louis

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
H. N. Williams	Supt.	Captain	16th U. S. Engrs.
C. E. Denney	Asst. to Pres.		O.M. Corps, Washington, D. C.

Employees Who Received Commissions

R. D. Burdick	Asst. Engr.	1st Lieut.	Coast Artillery
R. W. Parkhurst	Asst. Engr.	1st Lieut.	O. T. S. Ft. Leavenworth
J. L. Bate	Rodman	2nd Lieut.	O. R. C.

Officers who received commissions	2
Employees who received commissions	3
Number of employees volunteering or drafted	171
Total number of employees in government service	176

New York, New Haven & Hartford

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
P. J. Kearny	Elec. Engr.	Captain	Ordnance Dept.

Employees Who Received Commissions

R. M. Lawton	Asst. Engr.	Major	E. O. R. C.
F. E. Hanson	Asst. Engr.	Captain	E. R. O. T. C.
J. R. Hebblethwaite	Solic. Pass. Agt.	Captain	O. M. C.
Louis deB. Lovett	Res. Engr.	Captain	14th Engrs.
Frank E. Paten	Gen. Yd. Mast.	Captain	14th Engrs.
H. L. Watson	Struct. Dftsman	Captain	Sig. Corps
J. A. Connel, Jr.	Computer	1st Lieut.	Signal Corps
George B. Taylor	Resident Engr.	1st Lieut.	E. O. R. C.
W. Belcher	Chainman	1st Lieut.	U. S. A.
A. B. Cole	Inspector	1st Lieut.	U. S. A.
J. Haggerty	Gen. For. Mason.	1st Lieut.	U. S. A.
H. J. Lathram	Res. Engr.	1st Lieut.	U. S. A.
Earl L. Montgomery	Stenographer	1st Lieut.	Sig. Corps
M. F. Clement	Asst. Engr.	Lieutenant	U. S. N. Res.
C. A. Asher	Asst. Engr.	2nd Lieut.	14th Engrs.
J. B. Bell	Asst. Engr.	2nd Lieut.	U. S. A.
C. M. Burr	Road Foreman	2nd Lieut.	14th Engrs.
E. O. Carlson	Asst. Engr.	2nd Lieut.	14th Engrs.
J. A. Cunningham	Ch. Ck. Pas. Asst.	2nd Lieut.	14th Engrs.
J. Fleming	Asst. For. Shops.	2nd Lieut.	U. S. A.
Raymond Flynn	Stenographer	2nd Lieut.	U. S. A. Ord. Dept.
W. W. Meyer	Asst. Att'y	2nd Lieut.	Med. Corps
Alvah W. Race	Frt. Conductor	2nd Lieut.	14th Engrs.
C. A. Reynolds	Asst. Engr.	2nd Lieut.	U. S. A.
W. A. Walsten	Draftsman	2nd Lieut.	U. S. A.

Officers who received commissions	1
Employees who received commissions	25
Number of employees volunteering or drafted	1,420
Total number of employees in government service	1,446

New York, Ontario & Western

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Harry C. Carpenter	Draftsman	1st Lieut.	C. A. C. Res. Co'ps
B. R. Brown	Computer	1st Lieut.	C. A. C. Res. Co'ps

Employees who received commissions	2
Number of employees volunteering or drafted	126
Total number of employees in government service	128

Norfolk & Western

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
W. D. Cardwell	Spl. Rep.	St. Lieut.	Navy

Employees Who Received Commissions

C. Massei	Draftsman	Major	Coast Artillery
A. J. Carter	Timekeeper	Captain	Coast Artillery
H. C. Minton	Pilot	Captain	Field Artillery
W. J. Joyner	Conductor	Captain	Infantry
E. B. Lewis	Engr. Tests.	Captain	Coast Artillery
O. L. White	Furnace Rpm.	Captain	Infantry
Edw. T. Davant	Elec. Reprm.	Captain	Infantry
L. G. Figgatt	Clerk	Captain	Infantry
T. B. Powers	Brakeman	Captain	Coast Artillery
I. D. Brent	Computer	1st Lieut.	305th Engrs.
L. H. Cooke, Jr.	A. G. Atty.	1st Lieut.	Coast Artillery
R. H. Philhower	Yd. Condr.	1st Lieut.	Infantry
B. B. McClure	Med. Exmnr.	1st Lieut.	Medical Corps
F. P. Sutherland	Med. Exmnr.	1st Lieut.	Medical Corps
W. M. Wiener	Levelman	1st Lieut.	Field Artillery
E. G. Baldwin	Spl. Agent	1st Lieut.	Infantry
Walter Budwell	Foreman	1st Lieut.	35th Engrs.
S. T. Moore	Claim Adjstr.	1st Lieut.	Aviation Corps
Jos. E. Moore	Clerk	1st Lieut.	O. M. Dept.
A. H. Tabor	Yd. Master	1st Lieut.	Infantry
W. F. Bond	Ch. Clerk	1st Lieut.	Infantry
W. F. Philbrick	Sta. Master	1st Lieut.	35th Engrs.
R. B. Smith, Jr.	Clerk	1st Lieut.	Infantry
V. N. Speece	Blueprinter	1st Lieut.	Infantry
S. R. Johnston	Clerk	2nd Lieut.	Infantry
A. R. Harvey	Rodman	2nd Lieut.	Infantry
J. N. Gregory	Pilot	2nd Lieut.	Foreign Engrs.
W. L. Humphrey	Draftsman	2nd Lieut.	Engrs.
C. A. Graves	Ch. Despatcher	2nd Lieut.	Russ. Ry. Corps.
W. D. Leach	Tel. Operator	2nd Lieut.	Infantry
Robt. M. Wade	Clerk	2nd Lieut.	Signal Corps
R. P. Royer	Ch. Clerk to Pres.	2nd Lieut.	Ord. Dept.
Sidney F. Small	Sec. to Gen. Mgr.	2nd Lieut.	Signal Corps
R. R. Hutton	Clerk	2nd Lieut.	Nat'l Guard
J. C. Leesnitzer	Clerk	2nd Lieut.	Infantry
B. B. McAlister	Clerk	2nd Lieut.	Field Artillery
C. F. Bryan	Brakeman	2nd Lieut.	Field Artillery
J. P. Maloney	Transitman	2nd Lieut.	Signal Corps
H. L. Lindsay	Chainman	2nd Lieut.	Infantry
T. M. Yancey	Levelman	2nd Lieut.	Artillery
C. M. Cabaniss	Clerk	2nd Lieut.	O. M. Dept.
J. A. Stanley	Claim Adj.	2nd Lieut.	Infantry
H. E. Wicks	Secy. to AGCA.	2nd Lieut.	Infantry
H. F. Wilkerson	Sig. Inspector	2nd Lieut.	Coast Artillery
L. C. Scott	Ticket Clerk	2nd Lieut.	Cavalry
H. S. Hudleston	Brakeman	2nd Lieut.	Infantry
Mac Joines	Engineer	2nd Lieut.	Cavalry
T. G. Ammen	Clerk	Ensign	Naval Reserve

Officers who received commissions	1
Employees who received commissions	48
Number of employees volunteering or drafted	816
Total number of employees in government service	865

Norfolk Southern

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
C. M. Baine	Attorney	2nd Lieut.	U. S. Marine Co'ps

EMPLOYEES WHO RECEIVED COMMISSIONS

Blair Wilson	Clerk	Captain	U. S. Army

Officers who received commissions	1
Employees who received commissions	1
Number of employees volunteering or drafted	40
Total number of employees in government service	42

Northern Pacific

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
T. H. Lantry	Asst. to 1st V.P.	Lieut-Col.	Russ. Ry. Corps
B. O. Johnson	Div. Supt.	Major	Russ. Ry. Corps
G. F. Egbers	M. M.	Captain	Russ. Ry. Corps
D. S. Colby	Tr. Master	1st Lieut.	Russ. Ry. Corps
C. W. Fee	Tr. Master	1st Lieut.	Russ. Ry. Corps
E. W. Showalter	Tr. Master	1st Lieut.	Russ. Ry. Corps

EMPLOYEES WHO RECEIVED COMMISSIONS

J. H. McDonald		Major	Army
H. C. James		Captain	Signal Corps
A. L. Billings		Captain	Off. Reserve
H. R. Freeman		Captain	Army
Geo. F. Knight		Captain	Army
Francis M. Smith		Captain	2nd Engrs.
A. J. Carr	Despatcher	1st Lieut.	Russ. Ry. Corps
M. A. Farnsworth	Despatcher	1st Lieut.	Russ. Ry. Corps
C. H. Grant	Despatcher	1st Lieut.	Russ. Ry. Corps
J. E. Hood	Supervisor	1st Lieut.	Russ. Ry. Corps
P. R. Leo	Despatcher	1st Lieut.	Russ. Ry. Corps
L. B. Maggard	Despatcher	1st Lieut.	Russ. Ry. Corps
E. L. Marley	Despatcher	1st Lieut.	Russ. Ry. Corps
W. J. Barron		1st Lieut.	Russ. Ry. Corps
F. M. McCabe		1st Lieut.	Signal Corps
R. E. Quinn	Despatcher	1st Lieut.	Signal Corps
Michael Durkin		1st Lieut.	Russ. Ry. Corps
E. L. Harrigan		1st Lieut.	Russ. Ry. Corps
R. J. Higgins		1st Lieut.	Russ. Ry. Corps
J. R. Hoag		1st Lieut.	Russ. Ry. Corps
T. J. Kane		1st Lieut.	Russ. Ry. Corps
B. C. King		1st Lieut.	Russ. Ry. Corps
M. S. Montgomery		1st Lieut.	Russ. Ry. Corps
J. J. Sweeney		1st Lieut.	Russ. Ry. Corps
H. M. Gault		1st Lieut.	Army
S. A. Kenrick		1st Lieut.	Engrs.
E. J. Legg		1st Lieut.	Army
S. L. Phelps		1st Lieut.	Field Artillery
C. C. Anders		Lieutenant	Russ. Ry. Corps
J. J. Brown		Lieutenant	Russ. Ry. Corps
J. R. DuFresne		Lieutenant	Army
F. J. Challoner		Lieutenant	Engrs.
W. A. Cannon		Lieutenant	Army
J. A. Caldwell		Lieutenant	Army
O. J. David	Despatcher	2nd Lieut.	Russ. Ry. Corps
D. C. Putnam	Despatcher	2nd Lieut.	Russ. Ry. Corps
H. A. Yostle	Despatcher	2nd Lieut.	Russ. Ry. Corps
G. H. Hazzard		2nd Lieut.	Russ. Ry. Corps
F. S. Hirsch		2nd Lieut.	Russ. Ry. Corps
F. M. Niskern		2nd Lieut.	Russ. Ry. Corps
L. A. Paxton		2nd Lieut.	Russ. Ry. Corps
A. Stoneberg		2nd Lieut.	Russ. Ry. Corps
C. L. Terry		2nd Lieut.	Russ. Ry. Corps
Frank Vickers		2nd Lieut.	Russ. Ry. Corps
H. C. Webster		2nd Lieut.	Russ. Ry. Corps
Andrew Alexander		2nd Lieut.	35th Infantry
W. H. Glover		2nd Lieut.	Off. Reserve
Thos. Hatton		2nd Lieut.	Army
W. H. Happ		2nd Lieut.	Army
J. W. Hesser		2nd Lieut.	Army
E. F. Lunn		Prov. 2nd Lieut.	Aviation Corps
Geo. E. Blanchette		2nd Lieut.	O. M. Corps
R. H. Milne		2nd Lieut.	Army
S. E. Nortner		2nd Lieut.	Army
J. C. Robbers		2nd Lieut.	Army

Officers who received commissions	6
Employees who received commissions	55
Number of employees volunteering or drafted	1,577
Total number of employees in government service	1,638

Northwestern Pacific

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
Joseph W. Williams	Ch. Engr.	Major	18th Ry. Engrs.

EMPLOYEES WHO RECEIVED COMMISSIONS

C. E. F. Morest	Bridge Foreman	1st Lieut.	18th Ry. Engrs.
D. C. Creighton	Draftsman	2nd Lieut.	Engr. Off. Res.

Officers who received commissions	1
Employees who received commissions	2
Number of employees volunteering or drafted	53
Total number of employees in government service	56

Oregon Short Line

EMPLOYEES WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
Albert H. Ingold	Clerk	Captain	Cavalry
Hal B. Thompson	Clerk	Captain	Infantry
H. M. Derham	Stenographer	1st Lieut.	Infantry
F. G. Morse	Asst. Engr.	1st Lieut.	Engrs. Reserve
A. B. Robertson	Asst. Attorney	1st Lieut.	Infantry
R. A. Young	Draftsman	1st Lieut.	Utah Nat. Grd.
Edward T. Barton	Draftsman	2nd Lieut.	Infantry
P. F. Derham	Asst. Engr.	2nd Lieut.	Aviation Corps
N. C. Manley	Draftsman	2nd Lieut.	Coast Artillery

Employees who received commissions	9
Number of employees volunteering or drafted	465
Total number of employees in government service	474

Oregon-Washington Railroad & Navigation Co

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
Thos. W. Saul	Div. Engr.	1st Lieut.	18th Engrs.
Carl M. Maloney	Trainmaster	2nd Lieut.	Depot Brigade

EMPLOYEES WHO RECEIVED COMMISSIONS

Daniel J. Coman	Ch. Clerk	Captain	Hdqtrs. Corps.
J. Benjamin Hayes	Draftsman	Captain	Field Artillery
Geo. H. Schumacher	Draftsman	Captain	Supply Co.Q.M.C.
Harold W. Young	Asst. Engr.	Captain	18th Engrs.
Lawrence Connell, Jr	Telegrapher	1st Lieut.	Signal Corps
Karl J. Zink	Draftsman	1st Lieut.	35th Engrs.
Lloyd S. Spooner	Clerk	1st Lieut.	Instr. in Msktry.
Albert E. Hess	Repairer	1st Lieut.	U. S. Navy
Nathan C. Pearson	Asst. Engr.	1st Lieut.	Engr. O. R. C.
Lyman M. Chase	Asst. Engr.	1st Lieut.	Engr. O. R. C.
Earl S. Harbour	Asst. Engr.	1st Lieut.	Engr. O. R. C.
S. Bern'd McDonald	Stenographer	Ensign	Naval Volunteers
Alan W. Jones	Trucker	2nd Lieut.	Infantry
Wm. B. Cunnane, Jr.	Computer	2nd Lieut.	Engrs. O. R. C.
Arthur A. Hall	Asst. File Clk.	Ensign	U. S. Navy

Officers who received commissions	2
Employees who received commissions	15
Number of employees volunteering or drafted	277
Total number of employees in government service	294

Panama Railroad Company

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
Ralph E. Sartor	Asst. Engr.	Captain	Off. Reserve

EMPLOYEES WHO RECEIVED COMMISSIONS

J. H. Lindsey	Sig. Maint.	1st Lieut.	Signal Corps

Officers who received commissions	1
Employees who received commissions	1
Number of employees volunteering or drafted	4
Total number of employees in government service	6

The Pennsylvania Railroad (Lines East)

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
W. W. Atterbury	Vice-Pres.	Brigadier Gen.	Dir.-Gen. Rys. F.
C. M. Bunting	Comptroller	Colonel	On Dir.-Gen. Stf.
H. C. Booz	Asst. Ch. Engr.	Colonel	On Dir.-Gen. Stf.
H. H. Maxfield	Supt. Mot. Power	Lieut.-Col.	19th Ry. Engrs.
C. D. Barrett	Master Mech.	Major	19th Ry. Engrs.
W. H. Farraday	Asst. Pur. Agt.	Major	On Dir.-Gen. Stf.
C. S. Gaskill	Master Mech.	Major	19th Ry. Engrs.
Arthur W. Byron	Master Mech.	Captain	Of. Dir.-Gen. Ry. Wash'gton, D.C.
J. B. Crossley	Ch. Tr. Desp.	Captain	413 Tel. Bat.
W. S. Franklin, Jr.	Div. Frt. Agt.	Captain	Q. M. Corps
J. Taney Willcox	Asst. Secy.	Captain	Q. M. Corps
E. R. Mahaffey	Div. Str. Kpr.	1st Lieut.	108th Infantry

EMPLOYEES WHO RECEIVED COMMISSIONS

Horace M. Reading	Frt. Agt.	Colonel	113th Infantry
Samuel T. Barnard	Clerk	Lieut.-Col.	110th Field Art.
C. G. Baird	Div. Oper.	Major	413th Tel. Bat.
I. A. Miller	Ch. Accountant	Major	On Dir.-Gen. Stf.
J. W. Study	Ch. Clk. to G. M.	Major	On Dir.-Gen. Stf.
J. D. Jones	Div. Oper.	Captain	413th Tel. Bat.
C. A. Walter	Ch. Clk to Cmp.	Captain	On Dir.-Gen. Stf.
J. Ross Black	Asst. Ch. Clerk	Captain	On Dir.-Gen. Stf.
H. W. Anderson	Asst. Supervisor	Captain	111th U. S. Inf.
L. E. Angle	Clerk	Captain	114th U. S. Inf.
E. H. Armsby	Asst. Supervisor	Captain	Engrs. O. R. C.
C. L. Ayres	Asst. Sta. Master	Captain	111th U. S. Inf.
H. H. Baker	Clerk	Captain	112th U. S. Inf.
John T. Bretz	Pass. Conductor	Captain	110th U. S. Inf.
H. A. Brutsche	Clerk	Captain	110th U. S. Inf.
Robert J. Colgan	Asst. Supervisor	Captain	1st U. S. Engrs.
John R. Dunkel	B. M. Helper	Captain	110th U. S. Inf.
H. C. Fernau	Rodman	Captain	O. M. Corps
W. H. Frazee	Clerk	Captain	U. S. Infantry
F. P. Haller	Clerk	Captain	111th U. S. Inf.
Lelan M. Haller	Clerk	Captain	111th U. S. Inf.
R. H. Harris	Car Repairman	Captain	101st U. S. Cav.
Chas. H. Hatfield	Car Repairman	Captain	110th U. S. Inf.
J. M. Henderson	Patrolman	Captain	112th U. S. Inf.
A. W. Hoguet	Asst. Pass. C. Dist.	Captain	110th U. S. Inf.
George F. Huff	Asst. Rd. F. of En.	Captain	19th Ry. Engrs.
R. D. Jenkins	Asst. Time Keeper.	Captain	110th U. S. Inf.
Ben. W. Kline	Electrician	Captain	19th Ry. Engrs.
W. C. Lindner	Asst. Gen. Formn.	Captain	35th Ry. Engrs.
A. R. Lockhart	Clerk	Captain	108th U. S. F. A.
L. A. Loy	Warehouseman	Captain	107th U. S. Inf.
R. G. MacKendrick	Draughtsman	Captain	108th U. S. F. A.
Richard MacSherry	Clerk	Captain	O. M. Res. Corps
A. R. Masters	Asst. to Div. Eng.	Captain	6th U. S. Engrs.
Jas. F. Moore	Fireman	Captain	101st U. S. Cav.

Name	Railroad Position	Military Rank	Branch of Service
Robt. H. Reynolds	Power Plant Engr.	Captain	116th U. S. Inf.
F. S. Robins	Asst. Mast. Mech.	Captain	19th Ry. Engrs.
Clarence Roberts	Asst. R. F. of E.	Captain	21st Ry. Engrs.
David M. Salter	Shop Hand	Captain	110th M. G. Bat.
John Schulze	Clerk	Captain	U. S. Trans. Ser.
R. M. Smith	Asst. R. F. of E.	Captain	35th Ry. Engrs.
G. S. Stewart	Stenographer	Captain	108th U. S. F. A.
Archie M. Stivason	Maint. Foreman	Captain	112th U. S. Inf.
J. W. Thompson	Clerk	Captain	D't Br., 28th Div.
Chas. A. Walter	Chief Clerk	Captain	Engrs. O. R. C.
E. B. Whitman	Asst. R. F. of E.	Captain	19th Ry. Engrs.
P. W. Barr	M. P. Inspector	1st Lieut.	Ord. Dpt., U.S.A.
Rudolph Bloom	Asst. Med. Exam.	1st Lieut.	Med. C., U.S.A.
C. G. Boffenmyer	Inspector	1st Lieut.	19th Ry. Engrs.
Basil S. Bowles	Clerk	1st Lieut.	113th U. S. Inf.
P. E. Deckard	Asst. Med. Exam.	1st Lieut.	Med. O. R. C.
J. G. Dennis	Train Despatcher	1st Lieut.	413th Teleg. Bat.
O. S. Dickson, Jr.	Safety Inspector	1st Lieut.	35th Ry. Engrs.
John C. Diehl	Chief Drau'tsman	1st Lieut.	Engrs. O. R. C.
F. H. Dryden	Asst. to Div. Eng.	1st Lieut.	U. S. Engrs. C.
H. D. Dravo	Asst. Foreman	1st Lieut.	21st Ry. Engrs.
G. E. Fetterman	Asst. Ind. Agt.	1st Lieut.	313th U. S. Inf.
William P. Gleason	Draughtsman	1st Lieut.	O. M. Corps
William S. Grace	Rodman	1st Lieut.	Engrs. O. R. C.
F. A. Heywood, Jr.	Clerk	1st Lieut.	115th U. S. Inf.
F. W. Horton	Clerk	1st Lieut.	Aviation Corps
A. S. Howard	Clerk	1st Lieut.	114th U. S. Inf.
R. J. Hunter	Lineman	1st Lieut.	413th Teleg. Bat.
J. H. Kiesel	Inspector	1st Lieut.	21st Ry. Engrs.
Chas. A. Kline	Pass. Conductor	1st Lieut.	101st U. S. Cav.
E. S. McCormick	Train Despatcher	1st Lieut.	413th Teleg. Bat.
Chas. E. McCullough	Dist. Pass. Solic.	1st Lieut.	U. S. Avia. Corps
J. F. Mackey	Clerk	1st Lieut.	103rd Am. Train
T. L. Mallam	Foreman	1st Lieut.	19th Ry. Engrs.
James M. Morris	Asst. Mast. Mech.	1st Lieut.	21st Ry. Engrs.
Stephen H. Noyes	Clerk	1st Lieut.	1st U.S. Aero Sq.
F. W. Pennypacker	Clerk	1st Lieut.	109th U. S. Inf.
J. H. Pinter	Train Despatcher	1st Lieut.	413th Teleg. Bat.
Wm. M. Pomeroy	Frt. Solicitor	1st Lieut.	Ord. Dpt., U.S.A.
J. V. Reaph	Clerk	1st Lieut.	% Dir. G. Rys. Fr.
G. J. Richers	Asst. Mast. Mech.	1st Lieut.	15th Ry. Engrs.
J. C. Rill	Asst. Trainmaster	1st Lieut.	21st Ry. Engrs.
Wm. R. Rothe	Asst. Med. Exam.	1st Lieut.	U. S. Med. R. C.
Chas. R. Rowan	Inspector	1st Lieut.	110th U. S. Inf.
W. B. Rudd	Asst. R. F of E.	1st Lieut.	19th Ry. Engrs.
J. B. Shober	Chief Clerk	1st Lieut.	U. S. Sig. Corps
Herman Sloan	Clerk	1st Lieut.	109th U S. Inf.
C. K. Steins	Spec. App.	1st Lieut.	19th Ry. Engrs.
Paul Tanner	Foreign Frt. Sol.	1st Lieut.	Ord. Dpt., U.S.A.
H. M. Taylor	Frt. Solicitor	1st Lieut.	U. S. Inf.
G. L. Tilbrook	Rodman	1st Lieut.	10th U.S. A'ro Sq.
A. C. Tollinger	Asst. Sta. Master	1st Lieut.	Nav. Ct. Df. Res.
W. R. Wadsworth, Jr.	Clerk	1st Lieut.	112th U. S. Inf.
William Welch	Foreman	1st Lieut.	19th Ry. Engrs.
F. A. Wightman	Motive Pow. Insp.	1st Lieut.	19th Ry. Engrs.
Robert Woodcock	Asst. Supervisor	1st Lieut.	111th U. S. Inf.
H. C. Wright	Account Clerk	1st Lieut.	115th U. S. Inf.
Edgar Anderson	Clerk	2nd Lieut.	114th U. S. Inf.
J. A. Appleton	Yard Clerk	2nd Lieut.	21st Ry. Engrs.
E. E. Barrett	Collector	2nd Lieut.	U. S. Army
M. W. Bartlett	Usher	2nd Lieut.	Off. Res. Corps
Jos. R. Bingman	Clerk	2nd Lieut.	315th U. S. Inf.
Donald S. Bixler	Asst. Inspector	2nd Lieut.	413th Teleg. Bat.
R. A. Bixler	Clerk	2nd Lieut.	Off. Res. Corps.
F. C. Bowersox	Clerk	2nd Lieut.	115th U. S. Inf.
P. C. Brewer	Asst. Supervisor	2nd Lieut.	Engrs. O. R. C.
C. G. Brown	Spec. Apprentice	2nd Lieut.	19th Ry. Engrs.
Edward H. Brown	Clerk	2nd Lieut.	7th U. S. Inf.
F. R. Burgard	Pass. Brakeman	2nd Lieut.	28th Div. M. Pol.
Robert J. Byron	Foreman	2nd Lieut.	35th Ry. Engrs.
T. C. Cavanaugh	Clerk	2nd Lieut.	O. M. Corps.
F. T. Clayton	Stenographer	2nd Lieut.	O. M. Corps
H. R. Condon	Asst. Forester	2nd Lieut.	10th U. S. Engrs. (Frsty.)
W. M. Corbin	Car Repairman	2nd Lieut.	112th U. S. Inf.
Wm. R. Cummings	Flagman	2nd Lieut.	111th U. S. Inf.
K. N. Davis	M. P. Inspector	2nd Lieut.	Off. Res. Corps
Warner Doran	Clerk	2nd Lieut.	Off. Res. Corps
D. J. Dougherty	Chairman	2nd Lieut.	316th U. S. Inf.
J. E. Eckstein	Transitman	2nd Lieut.	301st U.S. Engrs.
S. E. Emmons	Chairman	2nd Lieut.	15th Ry. Engrs.
Edward W. Erne	Examiner	2nd Lieut.	O. M. Corps
McClure Fahnestock	M. P. Inspector	2nd Lieut.	19th Ry. Engrs.
Jos. Feasters, Jr.	Draughtsman	2nd Lieut.	Off. Res. Corps
H. B. Frazier	Clerk	2nd Lieut.	O. M. Corps
R. A. Freas	Clerk	2nd Lieut.	101st U. S. Cav.
L. B. Gallagher	Transitman	2nd Lieut.	Engrs. O. R. C.
John B. Gobeen	Clerk	2nd Lieut.	101st U. S. Cav.
Chas. M. Greeley	Special App.	2nd Lieut.	21st Ry. Engrs.
R. C. Greenland	Chairman	2nd Lieut.	304th U.S. Engrs.
Jas. A. Groff	Transitman	2nd Lieut.	111th U. S. Inf.
Geo. F. Gunning	Clerk	2nd Lieut.	304th Div. Train
E. D. Hagerty	Storekeeper	2nd Lieut.	19th Ry. Engrs.
Frank J. Hamilton	Rodman	2nd Lieut.	311th U. S. F. A.
A. C. Hawkins	Apprentice	2nd Lieut.	U. S. Coast Art.
Thos. P. Hawthorne	Draughtsman	2nd Lieut.	O. M. Corps
William S. Hayward	Stenographer	2nd Lieut.	Off. Res. Corps
William G. Horney	Clerk	2nd Lieut.	304th Div. Train
S. R. Hursh	Rodman	2nd Lieut.	14th Ry. Engrs.
R. J. Hutchman	Clerk	2nd Lieut.	Off. Res. Corps
Dean C. Jenkins	Rodman	2nd Lieut.	Engrs. O. R. C.
Perry A. Jones	Usher	2nd Lieut.	107th U. S. F. A.
F. R. Lehman	Clerk	2nd Lieut.	Off. Res. Corps
W. T. Kerwin	Clerk	2nd Lieut.	312th U. S. F. A.
H. E. Leonard	Usher	2nd Lieut.	111th U. S Inf.
John L. Lewis	Rodman	2nd Lieut.	Off. Res. Corps
A. M. Lightfoot	Clerk	2nd Lieut.	304th Dv. Trg. Cp.
E. K. McCloskey	Tele. Operator	2nd Lieut.	413th Teleg. Bat.
C. B. McCollough	Draughtsman	2nd Lieut.	U. S. Avia. Corps
H. B. McCormick	Clerk	2nd Lieut.	301st Graves R. S.
Earl W. McKee	Draughtsman	2nd Lieut.	Engrs. O. R. C.
Jas. S. McKeon	Clerk	2nd Lieut.	315th U. S. Inf.
John A. McManus	Clerk	2nd Lieut.	42nd Div., U.S.A.
Jas. S. Mathers	Computer	2nd Lieut.	304th Div. Tr. St.
E. A. Morris	Clerk	2nd Lieut.	111th U. S. Inf.
John V. Murray	Mach. Helper	2nd Lieut.	Off. Res. Corps
Herman E. Noll	Brakeman	2nd Lieut.	U. S. Field Art.
Chas. D. Northup	Fireman	2nd Lieut.	114th U. S. Inf.
R. H. Nottingham	Clerk	2nd Lieut.	114th U. S. Inf.
W. Lincoln Paul	Stenographer	2nd Lieut.	110th U. S. F. A.
Chas. W. Peckworth	Clerk	2nd Lieut.	Off. Res. Corps
A. W. Penrose	Clerk	2nd Lieut.	314th U. S. Inf.
J. E. Potter	Asst. Med. Exam.	2nd Lieut.	U. S. Navy
J. S. Richards	Apprentice	2nd Lieut.	311th U. S. Inf.
Blight S. Robinson	Sig. Apprentice	2nd Lieut.	Off. Res. Corps
J. L. Ross	Clerk	2nd Lieut.	110th U. S. Inf.
G. H. Schlotterer	Rodman	2nd Lieut.	104th U. S. Engrs.
F. S. Schmitt	S. H. Attdt.	2nd Lieut.	61st U. S. Inf.
H. R. D. Schwenk	Car Repairman	2nd Lieut.	314th U. S. Inf.
E. S. Shaw	Clerk	2nd Lieut.	Off. Res. Corps
J. G. Sheaffer	Spec. Apprentice	2nd Lieut.	19th Ry. Engrs.
H. W. Shoemaker	Clerk	2nd Lieut.	Off. Res. Corps
Herman Sloan	Clerk	2nd Lieut.	109th U. S. Inf.
F. G. Smith	Clerk	2nd Lieut.	Off. Res. Corps
J. G. Somerville	Rodman	2nd Lieut.	U. S. Mar. Corps
Geo. O. Tilghman	Draughtsman	2nd Lieut.	Off. Res. Corps
H. E. Walberg	Clerk	2nd Lieut.	U. S. Avia. Corps
J. T. Ward	Capt. Police	2nd Lieut.	28th Div. M. Pol.
Charles Weiss	Rodman	2nd Lieut.	304th U. S. Engrs.
K. S. Whittemore	Tracer	2nd Lieut.	Off. Res. Corps
Chas. S. Wilcox	Clerk	2nd Lieut.	U. S. Mar. Corps
Marshall S. Wilson	Conductor	2nd Lieut.	O. M. Corps
Geo. L. Winslow	Rodman	2nd Lieut.	303rd U. S. Engrs.
P. J. Sweeney	Special Agent	2nd Lieut.	110th U. S. Inf.
Louis L. Derickson	Tug Captain	Jr. Commander	Mine Sweep. Div.
R. E. Benson, Jr.	Stenographer	Ensign	U. S. Navy
Wilbur H. Conover	Tug Captain	Ensign	Pay Corps, U.S.N.
H. L. Donatelli	Ex. Agent	Ensign	Pay Corps, U.S.N.
M. P. Grady	Ex. Gateman	Ensign	U. S. Navy
F. E. Sellman	M. P. Inspector	Ensign	U. S. Navy
Benj. M. Snyder, Jr.	Rodman	Ensign	U. S. Navy
W. Spenser, Jr.	Inspector	Ensign	U. S. Navy
Leon C. Stroh	Clerk	Ensign	U. S. Navy

Officers who received commissions	12
Employees who received commissions	187
Number of employees volunteering or drafted	5,242
Total number of employees in government service	5,441

The Pennsylvania Railroad Company Lines West of Pittsburgh

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Harry C. Oliver	Spec. Agt.	Captain	Infantry
Nettelton Neff	Supt.	Captain	16th Engrs. Res.

Employees Who Received Commissions

E. C. Charnock	Gen. Bookkpr.	Captain	Infantry
J. L. Taylor, Jr.	Ast. Div. Engr.	Captain	Engrs. O. R. C.
R. Haubrick	Machinst	Captain	Infantry
Chas. C. Caldwell	Janitor	Captain	9th Battalion
N. A. Powell	Asst. Engr. Corps	Captain	Infantry
Cyrus G. Young	Clerk	Captain	Field Artillery
John J. Cost	Frt. Solicitor	1st Lieut.	Cavalry
H. A. Hobson	Pilot Engr.	1st Lieut.	Engrs. T. C.
Robert Lloyd	Asst. Engr. Corps	1st Lieut.	U. S. Reserves
F. C. McFarland	Draughtsman	1st Lieut.	Officers' Reserve
Leonard F. Wood	Frt. Engineman	1st Lieut.	Field Artillery
C. A. Sharp	Tallyman	1st Lieut.	Infantry
W. J. Pattison	Asst. Engr. Corps	1st Lieut.	Engr. O. R. C.
J. B. Mercer	Mach. Helper	1st Lieut.	10th Ohio
E. H. Meyer	Asst. Engr. Corps	1st Lieut.	308th Engrs.
Thirlestane Scott	Asst. Engr. Corps	1st Lieut.	15th Engr. O.R.C.
H. H. Munro	Clerk	1st Lieut.	Signal Corps
O. H. Brandt	Foreman	1st Lieut.	Infantry
Chas. F. Butler	Asst. Engr. Corps	1st Lieut.	21st Engrs.
C. S. Matthews	Despatcher	1st Lieut.	Signal Off. T. C.
A. C. Bosshardt	Stenographer	1st Lieut.	
H. J. Gildey	Instrumentman	1st Lieut.	
A. G. Crow	Asst. Med. Exam.	1st Lieut.	
Wm. B. Harris	Clerk	1st Lieut.	
L. J. Bowman	Clerk	2nd Lieut.	Infantry
Chas. R. French	Clerk	2nd Lieut.	U. S. Reserves
Dean Hodgdon	Frt. Solicitor	2nd Lieut.	Machine Gun Bat.
Thos. Waters	Agent	2nd Lieut.	O. M. Corps
Roy G. Thompson	Trav. Pass. Agt.	2nd Lieut.	Infantry
J. B. Pearce	Asst. Engr. Corps	2nd Lieut.	U. S. Reserves
R. J. Templeton	Asst. Engr. Corps	2nd Lieut.	U. S. Reserves
H. G. Oakes	Asst. Engr. Corps	2nd Lieut.	U. S. Reserves
Walter Bartol	Clerk	2nd Lieut.	U. S. Reserves
Carl S. Hoffman	Clerk	2nd Lieut.	Depot Brigade
Wm. W. Teichman	Clerk	2nd Lieut.	
M. L. Prindle	Clerk	2nd Lieut.	Infantry
Don C. Minick	Gang Foreman	2nd Lieut.	19th Engrs.
John H. Babbit	Asst. Engr. Corps	2nd Lieut.	Coast Artillery
Harold T. Miller	Asst. Engr. Corps	2nd Lieut.	15th Engrs.
Luther O. Maier	Asst. Engr. Corps	2nd Lieut.	309th Engrs.
Paul F. Bridges	Repairman	2nd Lieut.	Machine Gun Co.
Jos. S. Gillum	Asst. Engr. Corps	2nd Lieut.	Engr. Corps
Leo A. Hock	Yd. Brakeman	2nd Lieut.	Ambulance Train
J. H. Merryman	Asst. Engr. Corps	2nd Lieut.	330th Regt.
G. G. Black	Tr. Despatcher	2nd Lieut.	Signal Corps Res.
O. W. Mountfort	Br. Pilot Engr.	2nd Lieut.	
F. H. Derby	Asst. Engr. Corps	2nd Lieut.	Field Artillery

Grand Rapids & Indiana

E. B. Strom	Clerk	1st Lieut.	Infantry

Employees of Subsidiaries Volunteering or Drafted

Grand Rapids & Indiana Ry. Co.	85
Cincinnati, Lebanon & Northern Ry. Co.	8
Pennsylvania Terminal	5
Waynesburg & Washington R. R.	3
Louisville Bridge	1
Wheeling Terminal	2
O. R. & W. Ry. Co.	2

Officers who received commissions	2
Employees who received commissions	48
Number of employees volunteering or drafted	3,179
Total number of employees in government service	3,229
Total number of employees in government service (lines east)	5,441
Complete total of The Pennsylvania Railroad Company	8,670

Pere Marquette

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
E. B. Johns	Gen. Eastern Agt.	Major	Ord. Dept.

Employees Who Received Commissions

F. M. Rourke	Clerk	Captain	Signal Corps
Milton R. Whirtley	Clerk	Lieutenant	U. S. Navy
A. O. King	Clerk	2nd Lieut.	Infantry
Fred W. Westhoff	Clerk	2nd Lieut.	Q. M. Corps
R. A. Weldon	Clerk	2nd Lieut.	Q. M. Corps

Officers who received commissions	1
Employees who received commissions	5
Number of employees volunteering or drafted	146
Total number of employees in government service	152

Philadelphia & Reading

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Frederick Jaspersen	Eng. Docks & Con.	Lieut.-Col.	Russ. Ry. Corps

Officers who received commissions	1
Number of employees volunteering or drafted	1,282
Total number of employees in government service	1,283

Pittsburgh & Lake Erie

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
G. J. Wadlinger	Chief Clerk		
	Tariff Bureau	Captain	Q. M. O. R. C.
John R. Watson	Inspection Engr.	1st Lieut.	Engrs. O. R. C.
F. C. Gamsu	Draughtsman	2nd Lieut.	Engrs. O. R. C.

Employees who received commissions	3
Number of employees volunteering or drafted	422
Total number of employees in government service	425

Pittsburgh & Shawmut

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Dwight C. Morgan, Jr.	Mech. Engr.		Av. Sig. O. R. C.
F. A. Schmidt	Secretary		Av. Sig. O. R. C.
D. D. Lucore	Supt. Tel. & Sigs.		National Army

Employees Who Received Commissions

R. Z. Snyder	Draughtsman	2nd Lieut.	

Officers who received commissions	3
Employees who received commissions	1
Number of employees volunteering or drafted	19
Total number of employees in government service	23

Quincy, Omaha & Kansas City

Total number of employees in government service	18

St. Louis & Hannibal

Total number of employees in government service	3

St. Louis-San Francisco

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
S. T. Cantrell	Superintendent	Major	Russ. Ry. Ser. C.
F. B. Parker	Trainmaster	Major	Russ. Ry. Ser. C.
F. G. Jonah	Ch. Engr.	Major	12th Engrs.
H. E. Gabriel	Asst. Supt.	1st Lieut.	21st Engrs.
J. T. Brooke	Asst. Supt.	2nd Lieut.	3rd Engrs.

Employees Who Received Commissions

Fred Wickham	Brakeman	Captain	Infantry
Perry Topping	Asst. Engr.	Captain	5th Engrs.
A. M. Bottger	Rodman	Adjutant	Infantry
J. H. Brooking	Pilot Engr.	1st Lieut.	12th Ry. Engrs.
C. C. Brown	Transitman	1st Lieut.	12th Ry. Engrs.
J. L. Dellinger	Clerk	1st Lieut.	Artillery
H. F. McFarland	Asst. Engr.	1st Lieut.	12th Ry. Engrs.
F. D. Nash	Pilot Engr.	1st Lieut.	12th Ry. Engrs.
R. A. Potts	Draughtsman	1st Lieut.	Engineers
J. S. Schweitzer	Clerk	1st Lieut.	Infantry
Sam. B. Shorpe	Hostler	1st Lieut.	Field Artillery
M. F. Waters	Clerk	1st Lieut.	Cavalry
Emery Wells	Compiler	1st Lieut.	Engineers
J. D. Wright	Concrete Inspr.	1st Lieut.	12th Ry. Engrs.
I. E. Burke	Draughtsman	2nd Lieut.	12th Ry. Engrs.
J. J. Callahan	Asst. Engr.	2nd Lieut.	12th Ry. Engrs.
R. W. Crane	Sec. to Ch. Engr.	2nd Lieut.	Artillery
Jas. C. Kennedy	Timekeeper	2nd Lieut.	O. M. Dept.
W. E. Robinson	Transitman	2nd Lieut.	Engineers
W. R. Snow	Hostler Helper	2nd Lieut.	Infantry

Officers who received commissions	5
Employees who received commissions	21
Number of employees volunteering or drafted	718
Total number of employees in government service	744

St. Louis Southwestern

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
F. W. Green	Asst. to 1st V. P.	Captain	12th Engrs.
C. H. De Lorraine	Trav. Frt. Agt.	1st Lieut.	Signal Corps

Employees Who Received Commissions

F. J. Morris	Clerk	1st Lieut.	
J. F. McCurdy	Civil Eng.	1st Lieut.	
E. W. Ross	Carpenter	1st Lieut.	Infantry
R. E. Harrington	Accountant	2nd Lieut.	
W. E. Harrington	Clerk	2nd Lieut.	
C. E. Parker	Clerk	2nd Lieut.	

Officers who received commissions	2
Employees who received commissions	6
Number of employees volunteering or drafted	243
Total number of employees in government service	251

San Antonio & Aransas Pass

Employees Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Douglas Mackenzie		Captain	Artillery
Richard T. Aldworth		1st Lieut.	Aviation
Wm. F. Bourland		1st Lieut.	Engineers
Robt. B. Carruthers		1st Lieut.	Engineers
J. J. Cody		1st Lieut.	Aviation
Mich'l H. Erskine, Jr.		1st Lieut.	Artillery
Chas. R. Mayfield		1st Lieut.	Infantry
Garvin S. McCurdy		2nd Lieut.	Infantry

Employees who received commissions	8
Number of employees volunteering or drafted	93
Total number of employees in government service	101

Savannah & Atlanta

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Jas. E. Grainger	Aud. & G. Pass. A.	2nd Lieut.	U. S. Reserves

Officers who received commissions	1
Number of employees volunteering or drafted	6
Total number of employees in government service	7

Southern Railway System

Officers Who Received Commissions

Name	Railroad Position	Military Rank	Branch of Service
Z. P. Smith	Indus. & Img. Agt.	Major	
A. S. Burnham	Gen. Agt.	Captain	U. S. Reg. Army
L. L. Oliver	Attorney	2nd Lieut.	

Employees Who Received Commissions

M. L. Barker	Route Agt.	Major	National Army
Wm. C. Caye, Jr.	Inspector	Captain	Engr. Corps
D. M. Baird	Asst. Engr.	Captain	Engr. S. C. N. G.
C. L. Middleton	Tariff Clerk	Captain	U. S. Army
S. E. Brookings	Op.-Ticket Seller.	Captain	Signal Corps
G. H. Evans	Clerk	Captain	Q. M. Dept.
W. V. Dorsey	Agent	Captain, Radio	
A. V. Hooks	Asst. Eng.	Captain	Engr. Corps
C. A. Rady	C. C. to Supt.	Captain	1st Va. N. G.
J. B. Conyers	Agent	Captain	Inf., Camp Gordon
J. L. Primrose	Tax Clerk	1st Lieut.	U. S. Reserves
J. T. Lynch	Asst. Engr.	1st Lieut.	Engr. Reserves
H. A. Adams	Asst. Engr.	1st Lieut.	Engr. Reserves
J. N. Todd	Asst. Engr.	1st Lieut.	Engr. S. C. N. G.
Stewart Ticknor	Masonry Insp.	1st Lieut.	Engr. S. C. N. G.
R. W. B. Hart	Asst. Engr.	1st Lieut.	Engr. S. C. N. G.
B. M. English, Jr.	Transitman	1st Lieut.	Engr. S. C. N. G.
John A. Martin	Computer	1st Lieut.	Engr. S. C. N. G.
E. C. Cissel	Stenographer	1st Lieut.	Engr. S. C. N. G.
J. A. Dickenson	Junior Engr.	1st Lieut.	7th Engrs.
G. M. Ferris	Junior Eng.	1st Lieut.	55th Infantry
S. H. Griffin	Asst. Eng.	1st Lieut.	
J. F. Hill	Storekeeper	1st Lieut.	Engr. N. C. N. G.
P. B. Hite	Agt.-Operator	1st Lieut.	Q. M. Dept.
J. W. Stanley	Operator	1st Lieut.	Signal Corps
B. S. Giles	Clerk	1st Lieut.	Off. Train. Camp
Harold Smith	Trav. Frt. Agt.	Ensign	U. S. Navy
R. A. Miller	Transitman	Lieutenant	Engr. S. C. N. G.
Sanford B. Graves	Transitman	Lieutenant	Engr. S. C. N. G.
W. L. Smith	Clerk	Lieutenant	National Army
Milton Whitney, Jr.	Clerk	Lieutenant	National Army
J. P. Scott	Clerk	Lieutenant	National Army
Lauren Foreman	Pub. Agt.	2nd Lieut.	Q. M. Dept.
W. B. Sadler	Clerk to V. P.	2nd Lieut.	National Army
Victor Hoffman	Timekeeper	2nd Lieut.	Q. M. Corps
Alex Taylor	Junior Engr.	2nd Lieut.	Engr. Reserves
F. A. Sharpe	Asst. Engr.	2nd Lieut.	Off. Res. Corps
J. A. Steel, Jr.	Asst. Engr.	2nd Lieut.	Aviation School
J. D. Bowling	Chemist	2nd Lieut.	Marine Corps
A. B. Marshall	Draughtsman	2nd Lieut.	Engr. S. C. N. G.
C. S. Winstead	Clerk	2nd Lieut.	Engr. S. C. N. G.
T. G. Townsend	Timb. Treat. Insp.	2nd Lieut.	Engr. S. C. N. G.
J. R. Elder	Junior Eng.	2nd Lieut.	
J. A. Morgan	Agent	2nd Lieut.	Troop D Cavalry
L. A. Pick	Junior Eng.	2nd Lieut.	
H. E. Rogers	Operator	2nd Lieut.	Aviation Corps
R. L. Rogers	Despatcher	2nd Lieut.	Eng. C. Rus. Exp.
C. K. Sanders	Agent	2nd Lieut.	
J. G. Young, Jr.	Clerk	2nd Lieut.	316th M. G. Bat.
H. H. Buice	Clerk	2nd Lieut.	Inf., Camp Gordon

Officers who received commissions	3
Employees who received commissions	50
Number of employees volunteering or drafted	1,447
Total number of employees in government service	1,500

Southern Pacific Lines (Texas and Louisiana)

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
F. B. Irvine	Superintendent	Major	Russ. Ry. Ser. C.
E. B. Cushing	Asst. Gen. Mgr.	Major	17th U. S. E. R.
W. F. Hutson	Asst. Supt.	Captain	17th U. S. E. R.

EMPLOYEES WHO RECEIVED COMMISSIONS

A. A. Riley	Asst. Engr.	1st Lieut.	U. S. Army
J. J. Cammack	Brakeman	1st Lieut.	U. S. Army
M. C. Cooper	Switchman	1st Lieut.	U. S. Army
L. C. Kelley	Switchman	1st Lieut.	U. S. Army
L. M. Ross	Yard Clerk	1st Lieut.	U. S. Army
E. T. Biglow		1st Lieut.	U. S. Army
R. D. Hotcher		1st Lieut.	U. S. Army
G. C. Guinn	Cashier	1st Lieut.	U. S. Army
Earl Moore	Towerman	1st Lieut.	U. S. Army
S. B. Janes	Fireman	1st Lieut.	U. S. Army
M. E. Kopke	Clerk	1st Lieut.	U. S. Army
B. W. Martin	Fireman	1st Lieut.	U. S. Army
H. T. Rogers	Agent	1st Lieut.	U. S. Army
R. A. Baker	Clerk	1st Lieut.	U. S. Army
J. L. Dunn	Clerk	1st Lieut.	U. S. Army
A. J. Savage	Brakeman	1st Lieut.	U. S. Army

Officers who received commissions	3
Employees who received commissions	16
Number of employees volunteering or drafted	292
Total number of employees in government service	311

Southern Pacific (Pacific System)

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
J. L. May	Tr. Master	Colonel	Infantry
A. H. Babcock	Elec. Engr.	Major	U. S. Reserves
J. A. Given	Div. Engr.	Major	117th Engrs.
T. H. Kruttschnitt	Asst. Supt.	Captain	French Ry. Corps
C. M. Murphy	Tr. Master	Captain	Q. M. Corps
G. I. Wright	Elec. Eng.	Lieutenant	Naval Academy
J. P. Hart	Elec. Eng.	Ensign	Navy Yard

EMPLOYEES WHO RECEIVED COMMISSIONS

R. G. Sullivan	Hd. Clk. Mil. Bur.	Major	U. S. Reserves
W. O. Williams	Mech. Dept.	Captain	Russ. Ry. Corps
J. K. James	Res. Engr.	Captain	Engr. Corps
R. S. Twogood	Asst. Engr.	Captain	U. S. Reserves
Morton Russell	Asst. Engr.	Captain	18th Engrs.
E. P. Rideout	Draughtsman	Captain	U. S. Reserves
H. M. Smitten	Draughtsman	Captain	Engr. Corps
E. Hinchman	Draughtsman	Captain	Infantry
F. J. Rosenberg	Storekeeper	Captain	Q. M. Corps
R. W. Wells	Ch. Despatcher	Captain	Q. M. Corps
Leroy Foster	Ch. Despatcher	Captain	Q. M. Corps
E. V. Orr	Clerk	Captain	Signal Corps
C. T. Spooner	Clerk	Captain	U. S. Reserves
E. D. Woodruff	Land Appraiser	Captain	Engr. Corps
John Lansdale	Asst. Engr.	Captain	Engr. Corps
H. W. Edwards	Motorman	Captain	Infantry
O. L. McKee	Conductor	Captain	Infantry
F. C. Smith	Asst. Supt.	1st Lieut.	Russ. Ry. Corps
F. M. Clarke	Ch. Despatcher	1st Lieut.	Russ. Ry. Corps
A. A. Cirby	Loco. Engr.	1st Lieut.	Russ. Ry. Corps
H. C. Waddell	Loco. Engr.	1st Lieut.	Russ. Ry. Corps
W. Hunicke	Draughtsman	1st Lieut.	Signal Corps
M. K. Temple	Asst. Engr.	1st Lieut.	U. S. Reserves
G. W. Wade	Asst. Engr.	1st Lieut.	117th Engrs.
P. W. Stafford	Asst. Engr.	1st Lieut.	U. S. Reserves
H. B. Seger	Telegrapher	1st Lieut.	404th Tel. Bat.
E. N. Joyce	Telegrapher	1st Lieut.	Signal Corps
R. Derby	Oil Dept.	1st Lieut.	Reg. Army
J. F. May	Brakeman	1st Lieut.	Infantry
D. J. Rutherford	Elec. Engr.	1st Lieut.	
A. W. Helvern	Clerk	1st Lieut.	Signal Corps
T. B. Wilson	Clerk	1st Lieut.	Signal Corps
Wallace G. Benson	Clerk	1st Lieut.	Field Artillery
Ellis K. Nelson	Clerk	1st Lieut.	National Army
T. H. Darrow	Gen. Bdge. For.	2nd Lieut.	18th Engrs.
B. F. Dorris	Clerk	2nd Lieut.	U. S. Reserves
C. X. Johnson	Draughtsman	2nd Lieut.	U. S. Reserves
A. O. Mangold	Draughtsman	2nd Lieut.	Engrs. Reserve
A. G. Wagner	Timekeeper	2nd Lieut.	Aviation Corps
F. M. Thoburn	Asst. Engr.	2nd Lieut.	U. S. Reserves
A. H. Cummings	Accountant	2nd Lieut.	Q. M. Corps
W. Kelley	Telegrapher	2nd Lieut.	Signal Corps
J. Prior	Clerk	2nd Lieut.	Engr. Corps
J. W. White	Dining Car Dept.	2nd Lieut.	
C. R. Rice	Desp.	2nd Lieut.	Russ. Ry. Corps
B. N. Twaddle	Desp.	2nd Lieut.	Russ. Ry. Corps
J. H. Whitehead	Desp.	2nd Lieut.	Russ. Ry. Corps
W. C. Lievsay	Desp.	2nd Lieut.	Russ. Ry. Corps
W. A. Kelley	Desp.	2nd Lieut.	Russ. Ry. Corps
P. E. Turner	Desp.	2nd Lieut.	Russ. Ry. Corps
C. T. Alexander	Desp.	2nd Lieut.	Russ. Ry. Corps
A. E. Jones	R. H. Fon	2nd Lieut.	Russ. Ry. Corps
C. J. Jessup	Clerk	2nd Lieut.	Marine Corps
M. F. Shakely	Clerk	2nd Lieut.	Artillery
Carl F. Biehler	Chainm. M. of W.	2nd Lieut.	Artillery
B. L. Moulthrop	Cement Tester	Lieutenant	Naval Fly Corps
W. A. Cobb	Draughtsman	Lieutenant	Naval Military
J. W. Houghton	Ch. Eng. Pow. Plt.	Lieut. Engr.	U. S. Navy
J. J. Delaney	Clerk	Ensign	Naval Reserves

Officers who received commissions	7
Employees who received commissions	59
Number of employees volunteering or drafted	1,808
Total number of employees in government service	1,874

Spokane, Portland & Seattle

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
Chester K. Smith	Bridge Engr.	1st Lieut.	18th Engrs.
F. A. Jeter	Superintendent	Capt. & Adj.	Field Artillery
F. S. Barlow	Trainmaster		Russ. Ry. Ser. C.

EMPLOYEES WHO RECEIVED COMMISSIONS

H. A. Barnick	Trav. Engr.		Russ. Ry. Ser. C.
J. West	Engineman		Russ. Ry. Ser. C.
B. F. Fischer	Boiler For.		Russ. Ry. Ser. C.
E. M. Herring	Despatcher		Russ. Ry. Ser. C.
S. A. Gagnon	Despatcher		Russ. Ry. Ser. C.

Officers who received commissions	3
Employees who received commissions	5
Number of employees volunteering or drafted	93
Total number of employees in government service	101

Tionesta Valley

Total number of employees in government service	5

Toledo, Peoria & Western

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
M. S. Stevens	Asst. En. M. of W.	Captain	Infantry

Officers who received commissions	1
Number of employees volunteering or drafted	11
Total number of employees in government service	12

Toledo, St. Louis & Western

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
F. M. Miller	Gen. Agt.		

EMPLOYEES WHO RECEIVED COMMISSIONS

Leroy Coons		1st Lieut.	

Officers who received commissions	1
Employees who received commissions	1
Number of employees volunteering or drafted	58
Total number of employees in government service	60

Tonopah & Goldfield

Total number of employees in government service	1

Tonopah & Tidewater

Total number of employees in government service	6

Union Pacific

EMPLOYEES WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
C. O. Diffenderfer	Asst. Eng.	Major	Engr. Corps
H. E. McClintock	Draughtsman	Captain	Engineer Corps
J. E. Long	Asst. Eng.	Captain	Engineer Corps
Robt. F. Kimble	Stenographer	Captain	Q. M. Corps
M. L. Carey	Statistician	Captain	Off. Res. Corps
J. R. Ward	Conductor	Adjutant	National Guard
A. S. Kenworthy	Clerk	Adjutant	National Guard
J. N. Higenbotham	Yardmaster	Lieutenant	National Guard
F. A. Coulter	Tel. Operator	Lieutenant	Signal Corps
R. C. Williams	Bridge Foreman	Lieutenant	Engr. Corps
J. C. Mickle	Statistic Clerk	Lieutenant	Off. Res. Corps
Murray B. Reid	Motorman	1st Lieut.	Engr. Corps
John E. Wilson	Porter	1st Lieut.	National Army
Luther L. Taylor	Accountant	1st Lieut.	Cavalry
G. R Lawrence	Conductor	1st Lieut.	National Guard
E. Gowdy	Despatcher	1st Lieut.	Engineers
A. A. Flannigan	Despatcher	1st Lieut.	Engineers
C. G. Smith	Clerk	1st Lieut.	Supply Co.
Joseph R. Werts	Clerk	2nd Lieut.	National Army
Eugene R. McCluer	Instrumentman	2nd Lieut.	Army
Ben. H. Decker	Clerk	2nd Lieut.	Army
A. R. McCabe	Foreman	1st Lieut.	Russ. Ry. Ser. C.

Employees who received commissions	22
Number of employees volunteering or drafted	1,218
Total number of employees in government service	1,240

Vicksburg, Shreveport & Pacific

Total number of employees in government service	21

Virginian

Total number of employees in government service	25

Wabash

OFFICERS WHO RECEIVED COMMISSIONS

Name	Railroad Position	Military Rank	Branch of Service
J. R. Hundley	Cont. Frt. Agt.	Captain	Machine Gun Co.
R. A. Brown	Com'l Agt.	2nd Lieut.	Infantry

EMPLOYEES WHO RECEIVED COMMISSIONS

H. M. Bennett	Loco. Fireman	Captain	
E. A. Dixon	Asst. Boiler For.	1st Lieut.	

Name	Railroad Position	Military Rank	Branch of Service
S. M. Smith	Draughtsman	1st Lieut.	12th Engrs.
D. G. Phillips	Asst. Claim Agt.	1st Lieut.	O. R. T. C.
F. B. Baird	Timekeeper	2nd Lieut.	O. R. T. C.
Geo. Rogers	Off. Engr.	2nd Lieut.	
J. J. Sullivan	Machinist	2nd Lieut.	Infantry
J. A. McCarthy	Depot Pass. Agt.	2nd Lieut.	Infantry
R. F. Ragland	Draughtsman	2nd Lieut.	12th Engrs.
E. Gaebler	Draughtsman	2nd Lieut.	U. S. Engrs.

Officers who received commissions	2
Employees who received commissions	10
Number of employees volunteering or drafted	448
Total number of employees in government service	460

Western Maryland

Total number of employees in government service	108

Western Pacific

Total number of employees in government service	143

Wheeling & Lake Erie

Total number of employees in government service	138

ITALIAN RAILWAY FARES INCREASED.—Commencing with December 10, the Italian Government has decided to raise the price of railway fares 50 per cent. for first and second-class and 30 per cent for third-class tickets.

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French Railroad Guns Look Formidable

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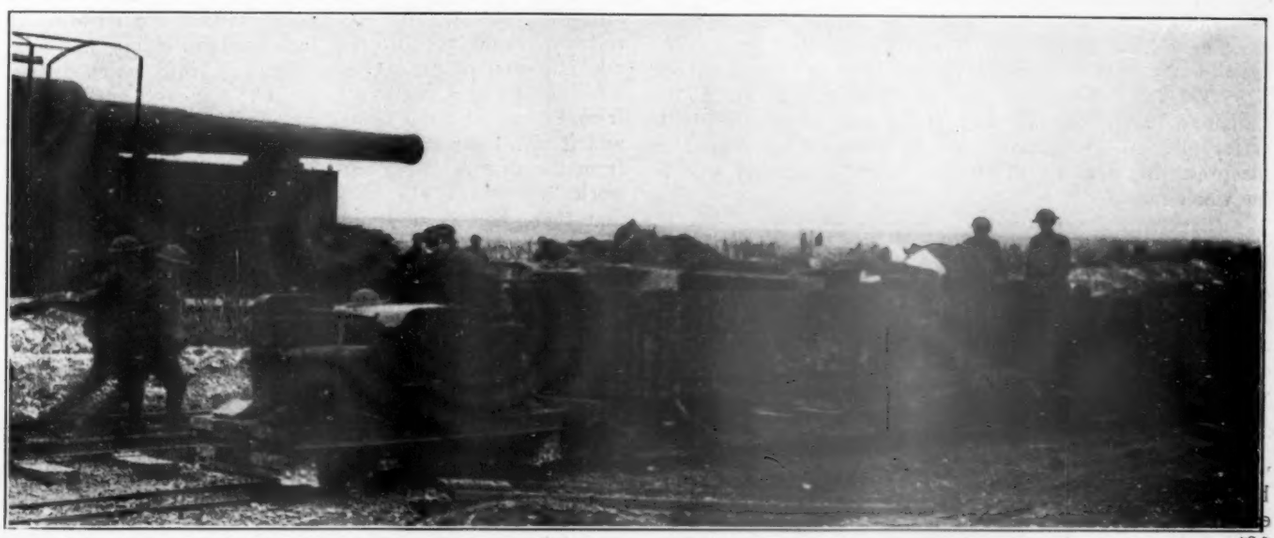
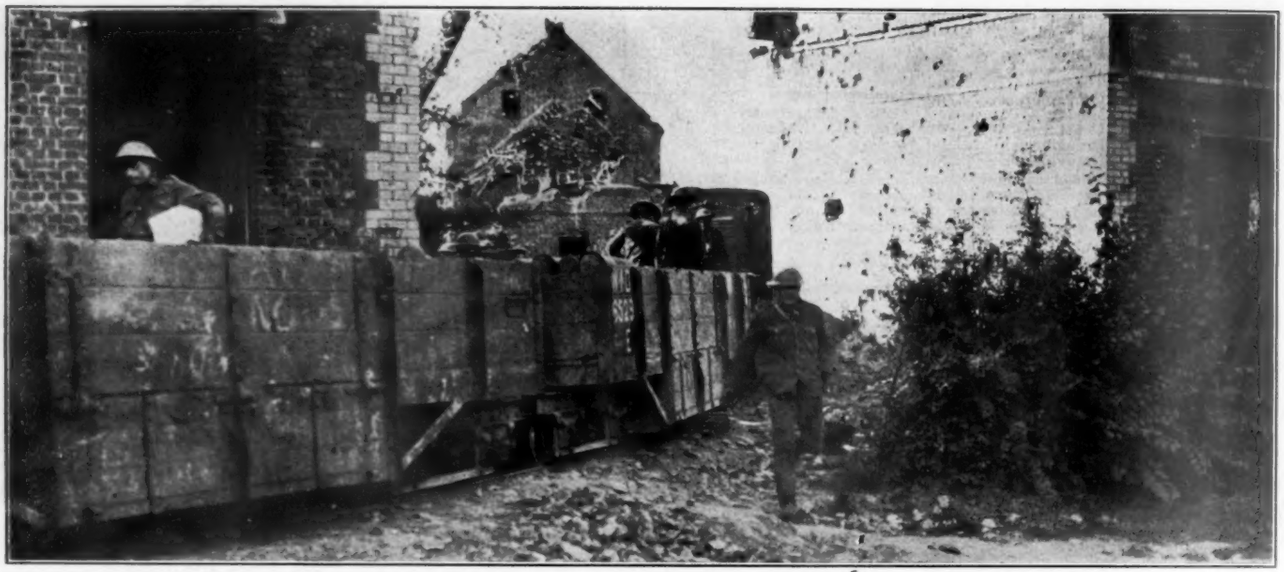
British Engineers Building a Railway Trestle Across the Swamps of Flanders



Photograph from Underwood & Underwood, N. Y.

The Light Railway Is Here Being Used to Carry Wounded



Ammunition Train Drawn by Canadian Armored Locomotive. (*Photo from Canadian War Records Office.*)

Railway Progress in Canada During the Year 1917

The Roads Have Worked Under Heavy Pressure With a Shortage of Labor; This Will Continue

By J. L. Payne,
Comptroller of Statistics, Department of Railways and Canals, Ottawa, Canada.

NOTWITHSTANDING ABNORMAL CONDITIONS, the railways of Canada did well in 1917. That is to say, they had larger gross earnings than ever before. For the statistical year 1916 they created a new record, with a total of $263,527,157; but this year they will go considerably beyond that aggregate. The official figures, which will tell the full tale, are not yet available. The published weekly returns of the three largest lines, however—the Canadian Pacific, the Grand Trunk and the Canadian Northern—which in normal years represent nearly 80 per cent of the total for all roads, show something like $230,000,000 for the year ended June 30 last. If the ratio of other years is maintained, it would mean that gross earnings for all lines in Canada for the year 1917 will exceed $285,000,000. November was the best month which the Canadian Pacific has ever had, and it may be assumed with safety that all other roads have in some degree shared in the prevailing activity. Of course, there is another side to the whole matter.

Railway Mileage Has Grown Too Fast

The full significance of $285,000,000, merely as a total of gross earnings, is not realized without a retrospective survey. Ten years ago the receipts were $146,738,214, and a decade back of that they were but $52,353,276. The comparison suggests remarkable progress, and, from the viewpoint of volume, that deduction is as sound as it is gratifying. But there is at least one vital qualification. The greater gain was made between 1907 and 1917; yet, when measured by the standard of mileage in operation, the betterment loses some of its seeming significance. Gross earnings per mile of line in 1897 amounted to $3,163; in 1907 to $6,536; and in 1917 to say $7,300. In other words, the increase per mile for the former ten-year period was equal to 106.6 per cent, and for the latter decennial 11.7 per cent. The explanation of this striking difference between mere totals and percentages is found in the fact that in 1897 there were 16,550 miles of railway in operation in the Dominion; in 1907 there were 22,452; and in 1917 probably 38,800.

The really salient feature of Canadian railway history is the growth of mileage during the past twenty years. Extensions of old lines and the construction of new have outrun earnings per mile. This is due to the fact that optimism found expression in the rapid spreading of transportation facilities. Up to three years ago there was a universal conviction in the Dominion that the building of railways could not proceed fast enough. This was particularly true of the western provinces, into which settlers were flowing in a swelling tide. The war stopped that rush from Europe and the United States for free or cheap land, and it also brought a sharp halt to construction; but, apart from the overwhelming cataclysm which has fallen on the world, the year 1914 would have given definite warning that there had been undue haste. Railway earnings had begun to decline five months before Germany invaded Belgium. So that, if we have a railway problem in Canada today it will not be understood in its essence unless regard is had to these facts. To the main features of that problem reference will be made a little farther along.

A Busy Year For Canada

Of the character of the traffic which led to a gain of probably $22,000,000 in earnings for the year 1917 nothing specific can be written. The facts will be disclosed in the official statistics of the Department of Railways and Canals. But, as railway executives well understand, traffic is created by commerce. One is the mere reflection of the other; and Canada has been very busy during the past year. It is no compensation in the final reckoning to know that while

Canadians by thousands have been giving up their lives in Flanders business has been good; yet some measure of solace is found in the fact that foreign trade has been mounting up to undreamt of figures. Little Canada has in 1917 imported and exported more than $2,000,000,000 worth of merchandise. This is a trifle over four times the aggregate of ten years ago. It is equal to the United States record of a later date than 1900. Freight rates are based, however, on tonnage rather than values, and hence it has not followed that railway earnings have kept pace with trade. If that had happened, there would inevitably have been acute congestion. Unprecedently high prices have expanded the commerce of the country in dollars to marvelous proportions; but freight rates have been stationary. Railways have felt the higher cost of living involved in war prices quite as much as have others, yet they have been held to the task of making ends meet on a scale of tolls which was fixed years ago.

It is well to try and emphasize what the railways of Canada have done under the extraordinary conditions which were thrust upon them with the outbreak of war. In 1914 they fell back $14,600,000 in gross earnings, and in 1915 had to meet a further slump of $43,000,000. In 1916 they recovered the lost $57,600,000 and added $6,000,000 to it. In 1917 they will probably make a further advance of from $22,000,000 to $25,000,000. These downs and ups called for high administrative skill in order to avoid serious trouble. No one need be told that inflated prices for everything added materially to operating cost. Railways have no more power to work miracles, such as making two and two add up three or five, than have individuals. It is therefore most creditable that under these abnormal circumstances, with rates fixed and expenses running wild, the railways have managed to fairly well maintain net earnings. Just how they have done it only a careful analysis of accounts would reveal; yet the inspiring fact remains that they have done it.

Canadian War Records Photo.

Canadian Railway Troops Laying Tracks Within a Few Hundred Yards of the Enemy Trenches

Intensive Railroading

It seems to me that the maintenance of net earnings has been achieved almost wholly by intensive railroading. The railways have not exactly made two blades of grass grow where one grew before, but they have made each car and each train move more tons of freight—which is the same thing in effect. There is only one way of increasing profits in any business: By decreasing the ratio of outgo to income. It sounds simple; but there are many ways of producing that result. The railways of Canada have probably tried them all. They have made the same equipment take care of a larger volume of traffic. They have cancelled every passenger train that could be taken off without arousing a rebellion. They have cut every train down to the fewest possible number of cars. Chair cars have been almost entirely eliminated. Every locomotive which could be got out of this reduced passenger service was turned over to the freight department. In the latter service marvels have been accomplished in car loading and higher train tonnage. The organization at terminals has been expanded and speeded up. In these ways, joined to direct economies in a thousand forms, was the higher and ever-rising cost of operation met and the credit balance at the end of the year kept up.

One of the greatest hindrances of the year grew out of shortage of man power. The war took away many thousands of trained employees. In the fervor of patriotism which swept the country hundreds of skilled mechanics gave up lucrative places in a single shop and went to the front at $1.10 a day. The Canadian Pacific alone has had over 7,000 of its employees join the colors. In particular, repairers were hard to get, and every railway manager will know what that meant in the face of heavy traffic demands. The real car repairer is born rather than developed, and mechanics drafted into this branch of the service worked much less effectively than did the experienced men who had gone overseas. These embarrassments ran through all departments; yet somehow, by one means and another, the railways managed to keep the wheels moving. Earnings were mounting up, it was true; but there were wearied brains in office and shop as one problem after another arose and demanded solution as the price of escape from collapse. A genuine epic could be written on the railway experiences of 1917. Suffice it that traffic was handled, although not without a series of embargoes, and happily, the railways of Canada realized a somewhat more substantial reward than the sense of duty done in a great crisis.

Government Takes Over Canadian Northern

During the latter part of 1916 and the early part of 1917 the members of the Royal Commission appointed by Government to inquire into and report upon the railway situation in Canada worked diligently at their problem. It was my privilege to prepare for the *Railway Age Gazette* (May 4, 1917, page 953) a summary of the findings and recommendations of the majority members of that Commission—Sir Henry L. Drayton and W. M. Acworth. A. H. Smith, president of the New York Central, their associate, dissented and made a separate report. There is no need at this time

for any further allusion to the matter. Government did not give effect to the majority recommendations, to the course of action proposed by Mr. Smith, nor to the voluntary advice tendered in a public way by Sir Thomas Tait and W. F. Tye. It did the one thing which was most urgent, and took over the entire Canadian Northern system, including express, telegraph, steamship, elevator and other subsidiary interests. This was done in August last so far as Parliamentary action is concerned. Without going into details which would take up considerable space, let it be said that Government has simply taken the place of Messrs. MacKenzie and Mann, the sole owners, assuming all liabilities and paying merely whatever value may be assigned to the common stock by Chief Justice Sir William Meredith and his associate arbitrators after full investigation. Actual possession will follow the arbitration proceedings.

Government already owns and operates the National Transcontinental, which was built as the Moncton-Winnipeg section of the Grand Trunk Pacific; so that Canada now takes a prominent place among nations in the matter of state ownership. The extent of that ownership may be gathered from the following summary of mileage:

Intercolonial	1,553
Prince Edward Island	275
National Transcontinental	2,002
Canadian Northern	9,600
Total	13,430

During the consideration of the Drayton-Acworth report there was considerable discussion throughout the country on the general question of nationalization. There were a few open advocates of a sweeping policy, a larger number who were in favor of taking over some, or all of the principal systems, and still many others who stood up for corporate control of all railways. The matter scarcely reached the position of a clear-cut issue. At this date of writing a general election is in progress throughout the Dominion and the entire railway question is subordinate to the war. Conscription and other vital matters growing out of Canada's participation in the great conflict command public interest to the exclusion of nearly all else.

The compensations which have come to a people agonized by losses on the battlefield are many and varied. We are learning the useful lesson, even in railway service, of what women can do when their brothers, husbands and sweethearts are called away to fight; but scarcely secondary is the discovery of the latent strength of the nation in monetary resources. There is today an outstanding liability of $1,085,000,000 in railway bonds, and it is safe to say that 98 per cent of it is owned abroad. Whenever prior to 1914, it became necessary for any purpose whatever to borrow more than two or three million dollars Canadians appealed to London or New York—almost invariably the former. Nearly every dollar represented in the national debt came across the Atlantic. When Government found it imperative to finance part of Great Britain's war purchases in Canada it tried the seemingly hazardous experiment of borrowing at home. Up to date it has succeeded in raising nearly $800,000,000 and has not struck bottom. The November Victory Loan was placed at $150,000,000. The people subscribed nearly three times that sum. They are apparently good for the balance of a billion without serious inconvenience.

There has been little or no labor trouble during the year. Adjustments were made with certain classes of employees by several of the larger roads; but there was not at any time a serious menace to peaceful relations. The concessions were all on the side of higher operating cost however.

Railway Mail Pay

At this juncture the railways are appealing to the Board of Railway Commissioners for a larger allowance for the carriage of mails. They are resting their case very largely on the decision of the Interstate Commerce Commission last year. In the United States the rates are based on 21 cents per car mile for full cars to roads which have not received state aid. In Canada the rate is 16 cents for full cars, 9 cents for half cars and 4 cents for the use of baggage cars. All roads are on the same footing. There is, however, a substantial difference in the service demanded across the boundary. In Canada the post office department supplies all the labor, both on and off the cars, except in the case of baggage cars; but, on the other hand, the railways do not receive any terminal allowances. The case is to be argued about the middle of December.

Despite the larger volume of freight traffic which the railways have been called upon to handle during the past two years immaterial additions have been made to equipment. The prudence of heavy purchase in 1912, which brought thousands of new cars into service in 1913, has been vindicated by events. The principal trouble during the past year in the car department, was in securing expeditious repairs. At times the situation in that regard was very trying.

Canadian Railway War Board

To meet extraordinary conditions growing out of the war, there was organized during the past year the Canadian Railway Association for National Defence, with headquarters in Montreal. The primary object of this organization, in which is represented the best railway judgment of all operating companies, is to develop the highest possible efficiency and co-ordination during the term of the war. Car shortage stood in the way of effective service, and the new Association at once addressed its activities toward securing a better interchange as between Canada and the United States. The balance at the outset was greatly adverse to Canada. That disability has in large measure been overcome. The next task was to increase the average carload, so as to make existing equipment give the highest possible service. Excellent results have been achieved. Collateral to carload was the important matter of reducing the time for loading and unloading, and here again co-operation has done wonders. In a word, the problem of moving traffic, in all its aspects, has received special and concentrated attention, and it can now be said that this voluntary co-operation of railways, without a penny of expense to the state, has yielded betterments which would have been beyond the power to accomplish of any extraneous body.

Looking Forward

The railways of Canada will enter upon the new year with all departments working at extreme tension. Earnings have been showing fair gains right up to the present moment, which is another way of saying that the rising freight movement persists. If these conditions are not modified ere long the car service officers will probably be compelled to call for more rolling stock. Taken altogether, the outlook is encouraging. The entrance of the United States into the war has created new business in Canada, and there are no grounds for suspecting a reduction in the volume of orders from Europe. The outflow of foodstuffs should increase. The shipment of munitions may even be raised to a larger scale. In spite of higher operating expenses the railways appear able to hold their own in the matter of net earnings. The scarcity of labor is troublesome, but is not so acute at this time as it was a year ago. Conscription, which went into effect in November, has not been hitting the railways with special severity, since they had practically let out every man who wanted to go overseas, and there is a disposition on the part of the military authorities to recognize the vital importance of preventing impairment of transportation service.

All said and done, however, there is nothing in either present conditions or prospects which suggests lighter burdens for those upon whose shoulders rests the grave responsibility of keeping the great railway machine up to the highest standards of efficiency at this period of infinite crisis.

New Railway Construction in Foreign Countries

Opportunities for Railway Supply Men Good in South America. Projects in Asia and Africa

By P. Harvey Middleton
Executive Assistant, Railway Business Association.

BUILDING RAILWAYS IN STRANGE LANDS is a peculiarly American occupation. Since William Wheelwright, of Newburyport, Mass., built the first railway on the South American continent in 1851—a short line in Chile—our railway engineers have constructed lasting memorials to American genius in every corner of the globe. A bequest made by Wheelwright to his native city is to this day used to send the ambitious youth of Newburyport to the Massachusetts Institute of Technology. Hailed as foolish dreamers by natives who thought their cataracts and jungles, swamps and mountains, offered insurmountable obstacles to railroad construction, the American railroad builders calmly proceeded to convert their dreams into realities.

From Alaska to Zanzibar American-built railroads are in operation. Meiggs and Thorndike, American engineers, constructed the famous Oroya Railroad in Peru, which reaches an elevation of 15,000 feet, and where the roadbed for miles was carried through galleries cut in the face of the solid rock by workmen suspended in cages from clifftops. Equally at home in the fever-haunted jungles of Brazil and the treeless plains of Argentina, in the interior of China or the Sahara desert, the American railway engineer has laid a firm foundation for the development of a world-wide trade in American railway supplies.

On August 30, 1916, the Bureau of Foreign and Domestic Commerce reported that our exports of railway supplies and equipment had more than doubled since 1914, the total value for the fiscal year being $75,000,000. Canada and Cuba are the foremost markets for our freight cars; Cuba, Canada and Brazil the largest markets for locomotives; Canada, Australia, Japan, Brazil, Argentina and Cuba the leading markets for steel rails. Large consignments of freight cars and other supplies have gone to Russia, and important consignments have also been sent recently to France, Spain and to Central America. Frank Rhea, an expert from the Division of Valuation of the Interstate Commerce Commission, representing the Bureau of Foreign and Domestic Commerce, has just completed an investigation of the field for American railway supplies in the Far East, Australia and South Africa, his studies covering railway construction, equipment, traffic and probable extension or reconstruction of railways and street car lines. Mr. Rhea is on his way back to the United States, and his report will be available shortly.

The following statistics are taken from a report which has just been published, covering the nine months ending September, 1917:

FOREIGN TRADE IN RAILWAY SUPPLIES.

	Nine months, 1917.	Nine months, 1916.
Railroad spikes	$1,304,616	$1,200,491
Steel rails	16,930,655	14,492,482
Switches, frogs, splice bars, etc.	6,113,135	4,621,880
Passenger cars, steam railways	321,615	470,569
Freight cars	20,210,425	18,910,308
Car wheels and axles	2,452,001	455,440
Engines and parts of electric locos.	353,372	388,090
Locomotives, steam	19,880,302	6,869,534
Railroad ties	1,830,338	2,125,611
EXPORTS WHICH ARE USED IN PART IN THE RAILWAY INDUSTRY:		
Electrical machinery and appliances	$40,225,951	$27,027,623
Metal working machinery	61,055,813	63,218,202
Tools	17,660,919	12,647,690
Metals and metal compositions	7,508,771	2,084,253
Abrasives	3,763,081	1,507,470
Paints, colors and varnishes	11,529,043	9,963,904

Argentina

Half a century ago railroads were almost unknown in Argentina, but today lines aggregating 22,688 miles radiate in all directions from Buenos Aires, a metropolis of 1,500,000. Immigrants from all Europe have flocked to the fertile plains, and the time is not far distant when the splendid grazing lands—often called the Fields of Gold, on account of the many millionaires they have created—will be nourishing fifty million cattle and two hundred million sheep. At the present moment Argentina—a country as large as the territory lying east of the Mississippi with Texas added—is in the market for railway supplies of all kinds, from locomotives and freight and passenger cars to signal equipment. Heavy investments of British capital in the steam railways and of German capital in the electric street railways attracted most of this business to Europe prior to the war, but present conditions have made it possible for the American manufacturer to establish connections there. The vast, well watered plains are all easily accessible to the seaboard with the simplest of railway construction.

In April, 1917, the Argentine government formulated plans to conclude the construction of the Patagonian Railroad from San Antonio to Lake Nahuel Huapi, in the territory of the Rio Negro. The government also has in view the construction of additional railroads in Patagonia, in order to open up the three territories of Rio Negro, Chubut, and Santa Cruz, all of which are exceedingly rich in natural resources, agricultural as well as mineral. The railroads operating there mostly burn fuel oil, obtained from the government oil fields of Comodoro Rivadavia.

The offices of the government railroads are at Calle Peru 672, Buenos Aires. All purchases are made through a storekeeper by bids. The types of rolling stock are varied. The steam railroads are equipped with power brakes. Westinghouse air brakes are used on the government roads, and all passenger cars have automatic brakes. All railways are subject to the supervision of the Minister of Public Works, who acts through the Direccion General de Ferrocarriles, whose powers were defined by a law passed in 1907 known as the Mitre law. This enactment freed railway constructional material from import and internal duties, but provided that 3 per cent. of net profits of all railway enterprises should be expended in constructing roads of access to outlying towns, and improving stations. Under that law, in four years, close upon $5,000,000 has been expended in improving 848 roads. By a decree of August 21, 1916, the Argentine government made the heating of passenger cars compulsory during the winter months, thus opening up a market for heating appliances. There are 750 kilometres of electric street railways in Buenos Aires, and they use electric brakes of American and German manufacture.

Some idea of the extent of American interests in Argentina may be gathered when it is recalled that in 1916 $50,000,000 of Argentine railroad stocks were transferred from British to American capitalists. It is generally understood that Argentine railroad securities have been used on a considerable scale in securing war loans on the New York market. In January, 1917, an American syndicate took over $15,000,000 of 6 per cent. debentures of the Central Argentine Railway, with an option to convert them into ordinary

stock at any time after one year. This stock in the past has been quoted as high as 120.

Bolivia

Bolivia with its 708,195 square miles could include within its limits the combined areas of California, Nevada, Utah, Idaho, Arizona, Oregon and Washington. With vast tablelands pushed up into the heart of the continent to a height of more than 14,000 feet, hemmed in by huge mountains, it is the highest inhabited country on the face of the earth. A country presenting obvious difficulties in railway construction, and one which has therefore attracted the American capitalist and railway engineer. American capital to the extent of $17,000,000 has been invested in Bolivian railways, chiefly through the banking house of Speyer, the National City Bank, and W. R. Grace & Co. Negotiations have been entered into at various times to extend further the Potosi-Sucre Railway to Puerto Suarez, on the Paraguay river. The concession at last accounts was controlled by an Italian syndicate, the Fomento de Oriente Boliviano. The length of line, which has been partially surveyed, will be between 425 and 450 miles, and its cost will probably exceed $10,000,000. The Bolivian government has agreed to guarantee a certain percentage on a portion of the construction cost.

Another Bolivian project is for the construction of a line from Yacumba on the Argentine frontier—between which point and the town of Embarcacion the Argentine government is constructing a railway—northward to Santa Cruz, tapping the oil country as well as other important although little developed sections of the country. This line would approximate 250 miles in length and would encounter some difficult grades. Concessions have been granted by the government for the line's construction, and much of the route has been surveyed. A line has also been surveyed from La Quiaca on the Argentine frontier (terminal of its government line) to Tarija, Bolivia, which is a town of some importance and the center of an agricultural area of great fertility. The length of this line would probably not exceed 125 miles.

The most important railways under construction are the extension of the Yungas Railway from La Paz to Coripata, and from that point on to Rurrenabaque on the Beni river. Then there is the route from Cochabamba to Santa Cruz; from Santa Cruz to Trinidad and from Potosi to Sucri, this last rapidly nearing completion. When the short distance from Tupiza to La Quiaca—now under construction—has been completed it will connect the Pacific on the West with the Atlantic at Buenos Aires, Argentina, on the East. This is a part of the proposed Pan-American Railway route.

The La Quiaca-Tupiza and La Paz-Yungas lines are being constructed with funds obtained in France and the United States, and the Potosi-Sucre Line with money appropriated by the Bolivian government. There is also to be constructed a line from Tupiza to Atocha, the Bolivian government having been authorized by the national Congress to enter into a financial transaction for $5,000,000 guaranteed by the shares which the government owns in the National Bank. The total cost of the railroads constructed by the Bolivian government amounts to $30,316,965. The materials for the Yungas Railway and for the Potosi-Sucre Railway have all been ordered in the United States.

The activity of the Bolivian government in recent years in the construction of railways, the establishment of automobile routes, and the building of new trails into the vast agricultural regions of Eastern Bolivia, has been favorably commented on throughout South America. There are at present in operation in Bolivia about 840 miles of railroad, besides some 1,100 miles in course of construction, and about 3,000 miles more or less definitely projected.

The Antofagasta and Bolivia Railway has taken over under lease the Bolivia Railway, which was incorporated in the United States in 1907, and holds a perpetual concession from the Republic of Bolivia for the construction of lines in the republic. Practically all the equipment of the Bolivia Railway is of American manufacture. The Arica-La Paz Railway, which traverses a mountainous region and operates 28 miles of rack rail, recently purchased a rack locomotive in the United States.

Brazil

In Brazil, that greatest of all South American countries, with its 3,300,000 square miles of territory, 4,000 miles of coast, and vast tracts of totally unexplored land, an American has made the greatest success in the railroad field. Percival Farquhar of New York, president of the Brazil Railway Company (a $250,000,000 corporation), has responded with such energy to the call of the Brazilians for help in the development of their country that a movement was actually launched recently by certain members of the Brazilian Congress against what they called "the Farquharizing of Brazil." Mr. Farquhar's company not only owns and operates thousands of miles of railways in Brazil, but also owns hundreds of thousands of head of cattle, millions of acres of grazing and timberlands, and has numerous other colossal enterprises. Another New Yorker, F. S. Pearson, is the president of A. Luz, the great syndicate which owns and controls the light, power, street railway and telephone systems of Rio de Janeiro.

The Diario Oficial of Rio de Janeiro published a decree in February, 1917, approving the revision of contracts entered into between the Brazilian Government and the Brazil Northern Railway Company relative to the construction of the Tocantins Railway. The company undertook to complete and open to traffic the second section of the line (from Alcobaca to a point 65 miles therefrom) by December 31, 1917. The construction of the first and third sections (from Cameta to Alcobaca, and from the termination of the second section to Chambioaz) were to be commenced simultaneously within a period of six months from a date to be named by the government. The switch section of the line, from Chambioaz to Santa Maria, and the Tocantins branch line, were to be commenced within six months after the completion of the third section. Compared with the difficulties encountered in the construction of that great achievement of tropical engineering, the Madeira and Mamore Railway, the Tocantins line is a much simpler proposition, as it is nearer the coast and the country is more healthy.

The certainty of continuance of railroad activity in Brazil opens up a field for railway equipment of all kinds. On government owned roads the government calls for bids on equipment purchases, but only accepts bids from those licensed to do business in Brazil. The license fees are not heavy. As there are no local factories manufacturing railway equipment, the foreigner has almost an open field. Calls for tenders are usually published in the Diario Oficial, but this method is not strictly adhered to, and many cars have been purchased recently by the Central de Brazil by private contract without competition.

Another method employed is to call for bids in the Diario Oficial, specifying the types and quality of equipment made by one or more manufacturers, in which case local agents endeavor to have their type of equipment or rolling stock specified. Sales cannot be effected by correspondence from the United States without an agent in Brazil, as there is rarely time for specifications to reach the United States and return in the allotted period. All negotiations for purchases take place in Rio de Janeiro. Compliance with the law is neither expensive nor exacting, and one American firm has recently established its own branch office in Rio to bid direct on the large government contracts and thus save commissions. Probably the best method, however, under normal

conditions is to have a local commission house in both Rio de Janeira and Sao Paulo, the two railway centers, act as agent, supported by a technical representative of the American manufacturer, who can travel extensively and watch opportunities as they arise.

The President of Brazil by decree of August 30, 1916, granted a concession to Alberto Alvares de Azevedo de Castro of Rio de Janeiro for the construction and operation of a railway from Cuyaba, the capital of the state of Matto Grosso, through the town of Sant' Anna, on the Paranahyba River, to communicate with the Araraquara Railway at Jangada, or at San Jose do Rio Preto. This total extension will be about 620 miles in length and will furnish direct rail communication between the city of Cuyaba and the ports of Rio and Santos. During the period of the concession (60 years) the government will not authorize the construction of any other railway within a zone of 12 miles on each side of the center of the roadbed, but will permit the laying of branch lines for private use. Plans for the first section, 62 miles, must be submitted to the government before June 30, 1919, and construction work must be begun within one year from the date of approval of these plans by the government. Construction must be carried on at the rate of 31 miles a year. The concession calls for a single line of meter (3.28 ft.) gage.

Chile

Since Wheelwright of Newburyport, Mass., built his first line in 1851 from Caldera to Copiapo, Americans have had a very definite interest in the railways of Chile. Wheelwright also constructed a line that was to connect Valparaiso with Santiago, but through lack of funds he was only able to complete it as far as Lai Lai; but another American, Henry Meiggs, of Catskill, N. Y., came along a few years later and finished it. In Chile the railways are largely operated by the government, which owns 1,979 miles. Passenger coaches are of the American pattern, and many of them are built in the United States.

Practically all the rolling stock for the government lines is purchased by the Ministro de Industria y Obras Publicas, Santiago, Chile, after asking for bids through the Diario Oficial. Not more than 60 days are given by these notices, and then the rolling stock must be built according to plans and specifications on file in the government offices at Santiago, so it is necessary to have an agent or representative there. On October 17, 1917, the American ambassador at Santiago cabled that tenders had been requested by the Chilean government for 15 locomotive boilers. With their bids American manufacturers were required to present the requisite export licenses.

At the present time Justiniano Sotomayor, vice general manager and vice minister of public works of Chile is at the McAlpin Hotel, New York, having been sent to this country by his government to try to obtain a certain number of locomotives and cars. The length of the Chilean State Railways is 3,570 miles, or 75 per cent of the total. The present administration of these government lines has sent a number of Chilean engineers to this country to learn American railroading. A few of them have been admitted to the motive power and maintenance of way departments of the Pennsylvania Railroad in Altoona, Pa., and Trenton, N. J. Jorje Beaumont, master mechanic of the Concepcion shops, is now in the United States inspecting machinery to be used in an up-to-date locomotive shop which is being erected in San Bernardo, near Santiago. Bids were obtained from engineering concerns in America and Europe and the contract was awarded to the Niles-Bement-Pond Company.

Costa Rica

Philip W. Chamberlain, of San Jose, Costa Rica, a member of the American Society of Civil Engineers, has a project for the construction of a railway from Alajuela to Grecia, a distance of about 16 miles. The railroad will require equipment not now on hand, as follows: Three 12-ton locomotives, 25 eight-ton freight cars, enough 20-lb. rails for 15 kilometres, telegraph and telephone equipment, and other necessary equipment. In Costa Rica nearly all supplies and equipment are imported. The Ferrocarril al Pacifico is owned by the government, the address of the purchasing agent being Administrador General, San Jose, Chile. Many of the purchases of the government owned roads are made from the lowest bidders, who submit their bids in answer to announcements that appear from time to time in La Gaceta Oficial.

Ecuador

It is proposed to build a railroad in Ecuador from Puerto Bolivar to Cuenca. The Ecuadorian congress has also authorized the municipality of Quito to grant an exclusive concession for a period of 30 years to any person or company who will construct an electric railroad from the capital to any town or towns of the canton.

Guadeloupe

A 75-year franchise was applied for on November 22, 1917, to cover the building and operation of electric railways in Guadeloupe, French West Indies, as well as the control of two waterfalls which will furnish sufficient power for the enterprise. The total length of the proposed lines will be 118 miles, narrow gage, and provision will be made for the carrying of passengers, mail, baggage and freight. Most of the supplies and equipment for the railways in Guadeloupe are purchased in France through competition, but some German locomotives are used, and American supplies might be taken in preference, if a reduction could be secured in the present high duties.

Peru

A study of the source and quantity of Peru's imports of railways supplies made in 1915 by "La Prensa" of Lima showed that the United States supplied $536,354 worth, or 80 per cent. of the total, in 1915, this despite the fact that European capital is so largely interested in Peruvian railways.

The proposed railway from Payta to Marañon is at present before the Peruvian Congress and the project is being engineered by a group of capitalists headed by Enrique Coronel Zegarra, who visited the United States some months ago in search of capital.

Panama

In May, 1917, the National Assembly of Panama approved a contract made with Basile Burns Duncan for the construction of a railway on the Atlantic coast starting from the mouth of the River Chagres and running southwest for at least fifty kilometres (31 miles) to the city of Almirante.

Uruguay

Uruguay, the smallest of the South American republics, about 10 per cent larger than the New England states, with 625 miles of coast, occupies a strategic position as a commercial gateway to South America. Montevideo is the nerve center of the railway system, which consists of some 2,530 kilometers and reaches both the Brazil and Argentine frontiers at several points. English capital has built most of the railways, but there is a strong tendency to create a government railway system, and the first step in this direction has already been taken. A plan has been under consideration for some time for the extension of the railway system which will require government appropriations to the amount of more than $10,000,000. Practically all the railways of Uruguay are operated under a government guaranty of interest, the period of the guaranty extending from 35 to 40 years. The percentage of the guaranty has been rearranged from time to time and may now be generally stated to be 5 per cent upon a fixed maximum capital per kilometer. On

a 5 per cent basis of guaranty it may be stated that usually earnings up to 6 per cent are retained by the railway company, while the excess over 6 per cent belongs wholly or partly to the government. Improvements to the value of $30,000,000 have been made in the port of Montevideo, which in point of depth, capacity and ease of access ranks among the first of the ports of the South Atlantic. The port railway system is a connecting link between sea and land traffic, and passengers as well as freight may be transferred from steamers at the docks to railway cars. The department in charge of all matters connected with the railways is the Ministerio de Obras Publicas, Montevideo.

Venezuela

An American company obtained a concession in Venezuela in August, 1917, for a railway from deep water to its mining properties in the Goajira peninsula. The contract calls for the construction of a port at Castilletes. From the port a railway 93 miles long and with branches three miles in length is to be constructed. The line is to be American standard gage and to have a one-way capacity of 10,000 tons daily.

Asia

Turning from Latin America to Asia, it is now certain that America's part in the railroad development of China will in the future by no means be confined to furnishing part of the construction material and equipment needed by the many new lines of communication with which the teeming millions of the Celestial Empire are to be provided. American surveyors are already at work. American capital is in the field. The Siems-Carey Railway and Canal Company of St. Paul, Minn., will construct as soon as possible, with money furnished by the American International Corporation of New York, 1,500 miles of railroad through the richest section of China, with an optional contract to build another 1,500 miles later. Negotiations for the project were started in May, 1916, during the visit to China of W. F. Carey, and it is said that the probable cost will be in the neighborhood of $100,000,000. The concession covers principally the provinces of Szechuen, Hunan and Chihli. These provinces are rich and thickly populated. They contain large deposits of coal, and the tea trade is likely to furnish considerable traffic, while the dense populations—106,652,501 in the three provinces—obviously offers a field for development of a general business which these new railroads will do much to stimulate. The American surveyors are proceeding as rapidly as possible, and in a short time actual construction should commence.

The following statement has just been issued by the American International Corporation:

"The expedition in China has made good progress in spite of the unsettled conditions which have prevailed in the country since the signing of our contract. Reconnoissance of 1,090 miles and preliminary survey of 540 miles have been carried out on the Chouchiakou-Hsiangyang line from Chouchiakou in Hunan province to Hanchungfu in Shensi. A reconnoissance is now being made to determine whether this line cannot be extended to Chengtu in order to tap the province of Szechuen, said to be the richest in China, which has a population estimated at about 70,000,000. The survey of the Chuchow-Chinchow line, which is to open up a rich coal and antimony mining district, from Chuchow in Hunan to Chinchow in Kwantung, has been completed with 994 reconnoissance and 503 preliminary miles, making a total for both lines of 2,084 reconnoissance and 1,043 preliminary miles. These lines, if constructed, will be the first lines to be built west of the Peking-Hankow and Hankow-Canton Railways, and will open up six new provinces to foreign trade."

In March, 1917, Japan was granted the right to lay five railroad lines in Manchuria and Mongolia. A scheme is being prepared by the authorities concerned for the extension of the line to Taonanfu, while laying a line between Kaiyuan and Hailung Cheng. This Kaiyuan-Hailung Cheng line will be 120 miles long, touching many prosperous towns of Eastern Manchuria.

When Commodore Perry made his first trip to Japan in 1854 he presented a miniature locomotive to the Shogun, and from that period dates the remarkable advance made by the Japanese in the developmnt of their railways. Twenty years later the pioneer line was opened between Yokohama and Tokyo, and today the islands of Japan, from Hokkaido on the north to Kyushu on the south, are well equipped with railroads built upon the most approved standards, and handling heavy tonnage and passenger movement. Japan has about 5,000 miles of railroad. Through trains carrying sleeping and dining cars operate on several of the main lines. The cities have electric suburban lines.

A special mission representing the Imperial Japanese Railways recently arrived in the United States to study American transportation and industrial methods. The Imperial Japanese Railways are represented on the mission by Jiro Nakamura, assistant traffic manager; Akio Kasama, secretary and purchasing agent; Dr. Yasujiro Shima, director of machinery and rolling stock, and S. Kobayashi, resident engineer of New York.

The Imperial Japanese Diet in October, 1917, passed a bill authorizing the expenditure of 10,000,000 yen ($4,980,000) for the extension of the Boryo and Giran Railway in Taiwan. The purchases for the government railways are all made by the Imperial Railway Board at Tokyo, usually by public tenders. Bids are accepted only from such bidders as have qualified and been placed on the list of bidders of the railway board. These bidders must conform to certain requirements of the board regarding their financial responsibility, and foreign firms or manufacturers must have a branch or agency regularly maintained in Japan to have their bids received. An official is, however, sometimes sent abroad to investigate the merits of various makes of appliances, and in some instances he makes purchases. There is a Japanese Government representative in New York who is empowered to make purchases of railway materials, Mr. Iyama, of 17 Madison avenue.

Africa

In Africa we find that there is a project to extend the railway from Quelimane, in Portuguese East Africa, for another 50 kilometres (31 miles) as soon as possible. Quelimane, one of the ports for the Zambesi delta, is without question the outlet for the richest and most productive section of Portuguese East Africa. The Zambesi Company, which holds a large land grant from the Portuguese government, owns the present railway. The gage is 3 ft. 6 in. The government railways in Portuguese East Africa have introduced American locomotives of the Mallet type. American manufacturers should address A Direccao do Porto e dos Caminhos de Ferro, Laurenco Marquez, Portuguese East Africa.

Spain

The Spanish Ministerio de Fomento granted a concession on January 12, 1917, to Don Miguel Otamendi for the construction and operation for 90 years of an underground electric railway system in Madrid. There will be four double-track lines and a total length of 8.7 miles. A period of eight years will be allowed for the work.

SPAIN TO BUILD ITS OWN LOCOMOTIVES.—Commercial Attaché C. W. A. Veditz reports from Paris, France, that the four great Spanish railway companies—the Northern of Spain, the Madrid-Sarragosa, the Andalusian Railway and the Madrid-Cateres Company—have joined in the formation of an important company to manufacture locomotives.

Railway Earnings and Expenses for the Year 1917

Heavy Falling Off in Operating Income in Spite of Unprecedented Traffic Which Was Handled

By Frank Haigh Dixon
Chief Statistician, Bureau of Railway Economics

RAILWAY REVENUES for the calendar year 1917 have in all probability crossed the four billion mark, which is higher by some four hundred million dollars than the point attained in 1916, which broke the record by many millions. It is within the memory of young men that revenues were less than one-half what they are now. The aggregate crossed the two-billion mark in 1905 and the three-billion mark in 1913; it has needed but four years to bridge the gap between three and four billions. Even in these days of war financing by the billion, this record of growth in railway service to the American public cannot but lead one to pause and wonder.

Railway expenses are on an even sharper incline. They amounted to more than $2,800,000,000 in 1917, which is nearly five hundred millions greater than in 1916. Expenses this year are virtually at the same level as the revenues of 1912, so fast have all the factors of railway operation grown during the past five years.

Net revenue from railway operation has declined in 1917 by not less than fifty million, while increased taxes of about fifty million will bring the final figure of operating income for the year to a point lower than that of 1916 by one hundred millions or more. Thus operating income, which in 1916 was well over the billion-dollar mark, has this year probably slipped back under a billion.

This decline in operating income has been most marked in the Eastern District, where the roads for two years and more have been struggling with the problems of traffic congestion and the choking of their terminal facilities on the Eastern seaboard and at industrial centers. Three-fourths

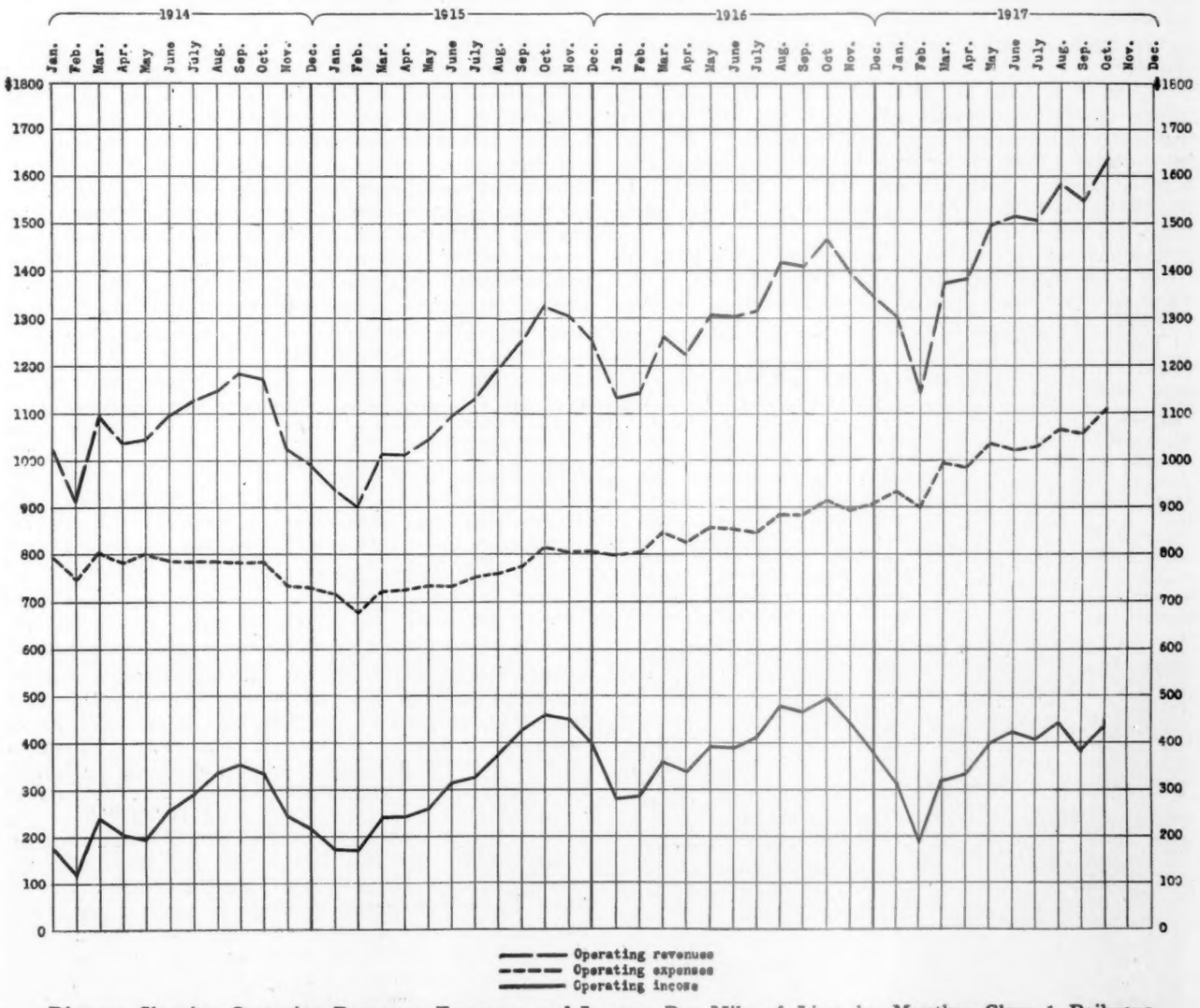


Diagram Showing Operating Revenues, Expenses, and Income Per Mile of Line, by Months; Class 1 Railways

of the total decrease in operating income for 1917 occurred in the East, the remaining fourth being divided rather unequally between the West and the South, the West having the larger share. Eastern roads suffered a loss in operating income during every month of 1917; in fact, their operating income has been on the decline since September, 1916. For the Western roads, the sharp downward turn occurred in August, while the Southern roads showed slight decreases in August, September and October, and nearly held their own for the year as a whole.

This phenomenal turn in operating income is clearly indicated in Table I. In that table, the operating income per mile for each month of 1917 for which statistics are available is compared with the operating income for the corresponding month in each of the preceding three years, that for 1917 being taken as 100, and the earlier years being shown as a percentage of that for 1917. The extreme falling off in some of the months of 1917 as compared with 1916 is evident for the United States as a whole, for the Western district, and especially for the Eastern district. In the South operating income has followed a more even course.

As compared with the years 1915 and 1914, operating income in 1917 was usually greater. But it will be noted that the general tendency from month to month in 1917 has been to exceed these earlier years by a smaller and smaller margin, except as compared with 1914 in the South. In this, again, the exceptional situation of the Eastern roads stands out conspicuously.

Standing out in bold relief against the year's gross receipts is the steady, resistless rise in operating costs. Every month of 1917, and each of the three districts in every month, showed increased expenses over 1916. It is true that revenues were also increased during every month, but the increase in expenses far outstripped the growth of revenues. Putting the growth of these two factors on a relative or percentage basis, we find that the first ten months of 1917 give the following results:

PER CENT. OF INCREASE, 1917 OVER 1916

Month	Revenues per mile	Expenses per mile
January	14.7	16.5
February	0.6	12.3
March	9.0	17.4
April	13.1	19.2
May	14.7	20.7
June	16.3	19.8
July	14.6	21.3
August	11.4	20.8
September	9.7	19.5
October	12.5	23.2
Ten months to October	11.8	19.3

The table indicates, first, that the rate of increase in expenses was greater than that of revenues, during every one of the ten months for which statistics are available at the time of writing; second, that while the rate of increase in revenues was roughly on the downward trend from June on, the rate of increase in expenses was distinctly upward; and third, that the gap between the rates of increase in revenues and expenses was growing steadily wider as the months went on.

This increase in operating expenses, which, with an even greater increase in taxes, has created the remarkable result already noted, that operating income has actually fallen off in 1917, notwithstanding an extraordinary increase in gross operating revenues, is set out in the chart. Operating revenues are there seen to have followed in the last four years their regular cycle, with a generally ascending trend. The appearance of a markedly greater rate of ascent in 1917 is due to the fact that revenues recovered from an abnormally low slump in February. The line representing expenses, after falling with the great decline in business in the last part of 1914, rises almost steadily until 1917, when it turns rapidly upward. The effect of this more rapid rise of expenses, as also of taxes, is reflected in the lower general level of the line representing operating income in 1917.

To appreciate the significance of this outstanding fact in the railway operations of 1917, we may turn to an analysis of the expenditures during the first ten months—January to October—for which statistics are now at hand. Operating expenses per mile increased 19.2 per cent during these nine months; it was almost certainly over twenty per cent, or one-fifth, for the twelve months closing with December 31. Transportation expenses, which represent one-half of total operating expenses, during the ten months increased 28.0 per cent. This marked increase was largely due to the rise in unit cost of the two largest items of transportation expense, namely, fuel and labor, especially labor involved in train operation. The upward trend in fuel prices is well known, and its causes are too well understood to call for extended discussion. Railway train operation in 1917 called for the consumption of approximately 150,000,000 tons of coal. If this coal cost the roads a dollar more per ton than in 1916—some of the Eastern roads testified in the Fifteen Per Cent Case that the increase was greater than a dollar—this one price-change would add $150,000,000 to the railway expense account. In the matter of trainmen's compensation, the year 1917 is the first full year under the Adamson Eight-hour law, which became effective January first. In addition, nearly all other classes of railway labor have received wage increases and adjustments during 1917 that have contributed their force toward the upward trend of transportation costs. On top of these comes the increased cost of general supplies, which has had a telling effect on all branches of railway operation.

Passing over traffic, general and miscellaneous expenses, which in the aggregate represent only one-fifteenth of the total expenses, and in 1917 showed an increase of 11.7 per cent over 1916, we come to the significant maintenance accounts. Here, in some respects, will be found the key to the year's operations, for while transportaiton must be conducted in accordance with the demands of the travelling and shipping public, maintenance work on the one hand

TABLE I

RATIO TO OPERATING INCOME PER MILE IN 1917 OF OPERATING INCOME IN 1916, 1915 AND 1914, BY MONTHS

	UNITED STATES				EASTERN DISTRICT				SOUTHERN DISTRICT				WESTERN DISTRICT			
Month	1917	1916	1915	1914	1917	1916	1915	1914	1917	1916	1915	1914	1917	1916	1915	1914
January	100.0	90.4	55.3	56.6	100.0	119.8	52.3	44.9	100.0	81.5	50.1	60.0	100.0	70.4	59.9	64.4
February	100.0	152.1	90.9	62.7	100.0	277.8	129.0	50.0	100.0	105.9	58.0	62.1	100.0	115.6	89.8	69.5
March	100.0	113.2	76.5	75.2	100.0	125.7	80.9	69.8	100.0	100.0	67.4	75.9	100.0	108.4	76.5	79.3
April	100.0	102.7	72.3	62.0	100.0	117.0	87.3	67.0	100.0	101.0	72.8	63.8	100.0	89.8	58.1	56.2
May	100.0	99.0	64.9	48.9	100.0	114.6	76.9	50.5	100.0	101.0	65.0	55.9	100.0	83.9	53.9	44.9
June	100.0	92.7	73.7	60.7	100.0	101.3	85.6	61.2	100.0	98.3	64.1	59.3	100.0	82.7	65.2	59.9
July	100.0	100.7	80.6	71.3	100.0	106.6	88.2	69.8	100.0	87.5	74.0	67.4	100.0	98.1	74.8	73.3
August	100.0	107.9	85.0	76.3	100.0	107.9	92.4	78.7	100.0	101.0	73.9	62.9	100.0	110.1	80.6	77.4
September	100.0	121.6	110.4	91.4	100.0	115.5	114.9	88.4	100.0	101.3	88.4	60.1	100.0	134.0	112.9	104.8
October	100.0	114.1	104.8	76.7	100.0	115.6	121.0	79.0	100.0	101.4	79.8	52.2	100.0	114.7	98.4	81.1

barometers the state of the labor market and the financial vigor of the roads, while on the other hand it foreshadows the physical condition of the railway plant in the future.

The maintenance accounts—the upkeep of way and structures and of equipment—call for two-fifths of the total outlay of the railways. As against the increase in total expenses (ten months to October) of 19.2 per cent, maintenance expenses increased only about ten per cent. Maintenance of equipment which cannot be long neglected if traffic is to continue moving in any quantity, increased 13.5 per cent, while maintenance of way, which can be allowed to suffer more in time of stress, increased only 6.1 per cent. Maintenance expenses are composed largely of direct outlays for labor, and of such supplies as steel, ties, ballast, etc. ' The prices of these factors per unit—labor and supplies—probably increased faster during 1917 than their total cost to the railways as revealed in the maintenance accounts. Unskilled and mechanical labor, such as is employed in large measure on the tracks and in the shops and repair yards, secured unusually large increases.

Because of the facts just noted, the ten per cent increase in maintenance expenses does not indicate the accomplishment of ten per cent more actual maintenance work. On the contrary, measured in such physical units as rails, ties and yards of ballast laid, and specific repairs made to buildings and equipment, the units of work done have probably been less in 1917 than in 1916. This would have created a sufficiently serious prospect as to the physical condition of the railway plant in the future, even had the traffic handled during 1917 been no greater than in 1916. But bearing in mind the greatly increased traffic of 1917, as shown by the statistics of the Railroads' War Board, the prospects of the future appear even darker. For the six months to September 30 the War Board has tabulated figures showing increased freight traffic, measured in revenue ton-miles of 14 per cent. Passenger traffic statistics are not available, but passenger revenue increased during 1917 at a greater rate than did freight revenue, and this fact, together with the large troop movements of the summer and fall, make it easily probable that the passenger business of 1917, as well as the freight business, was the greatest on record. The added wear and tear of this record traffic must have been especially severe on the equipment, which was loaded to greater capacity than formerly and travelled in heavier car and train loads.

This deferring of maintenance, while much to be regretted, is not to be avoided. In any case where available funds are insufficient for all desired, or even needed, expenditures, the most urgent must first be taken care of. Transportation expenses must be paid according to the amount of service rendered. But railway equipment, and especially track, can be worn down much beyond the point at which ordinarily repairs become desirable, and still be serviceable. Hence maintenance is the place where curtailment begins. This applies mainly to the less prosperous roads. But even the strongest roads are driven to economize because of the rapid increase in the cost of repairs. With the large element of abnormality in the present price situaiton, it would be reckless to undertake any more maintenance at current costs than the minimum necesary for continued service.

As the year closes, the outlook for the railways is not cheering. With revenues running at a higher level than ever before, the carriers are embarrassed by the very source of this surface prosperity. The swelling volume of traffic has to be carried under unprecedented pressure and hence with unduly inflated costs. Add to this the accelerating increase in unit expenses for labor and material, and the benefit of the new business is lost. The additional business may in many cases even reduce the efficiency of the roads and have their earning ability below that previously attained.

Table II summarizes the operating figures for the ten months, January to October, 1917, in a comparison with the corresponding period of 1916.

TABLE II

OPERATING REVENUE, EXPENSES AND INCOME: TEN MONTHS JANUARY TO OCTOBER, 1917, COMPARED WITH 1916

Item	Amount 1917	Amount 1916	Per Mile 1917	Per Mile 1916	Inc. 1917 over 1916—%
Aver. miles of line oper..	231,047	230,533	....	....	...
Total operating revenues.	$3,350,721,651	$2,991,462,057	$14,502	$12,976	11.8
Total operating expenses.	2,341,081,625	1,959,970,384	10,132	8,502	19.2
Net operating revenue....	1,009,640,026	1,031,491,673	4,370	4,474	d2.2
Taxes	173,705,609	130,963,005	752	568	32.4
Uncollec. railway revenue	557,114	735,746	. 2	3	..
Operating income	835,377,303	899,792,922	3,616	3,903	d7.4

Canadian War Records Photo.

Canadian Railway Troops Building Track for a Light Narrow Gage Railway Near the Firing Line

Receiverships and Foreclosure Sales in 1917

Two Important Systems Sold Under Foreclosure With Drastic Scaling Down of Bonds and Interest

THERE were no important railroads placed in the hands of receivers in 1917, while on the other hand three important systems, which at the beginning of the year were in receivership, were reorganized, two of them through foreclosure and one through voluntary reorganization, and were returned by the courts to their securityholders.

The Kansas City, Mexico & Orient, with 964 miles of road, was declared bankrupt in 1917 and a receiver appointed, but as a matter of fact the road had been on the verge of bankruptcy ever since its sale under foreclosure July 6, 1914. The purchase price at that time was fixed at $6,001,000, but up to October, 1916, only $3,000,000 of this had been paid by the new company. The court, to avoid a new receivership, ordered $24,000,000 bonds of the original company to be deposited with it as security for the balance of the purchase price. In April, 1917, however, it was found necessary for the court to appoint W. T. Kemper as receiver.

The Wichita Falls & Northwestern is a part of the Missouri, Kansas & Texas system, but for some time after the bankruptcy of the rest of the system it was operated as an independent solvent property. During 1917, however, it was found desirable to have a receiver appointed.

The Denver & Salt Lake was the successor company to the Denver, Northwestern & Pacific. The Denver, Northwestern

RAILROADS IN THE HANDS OF RECEIVERS

Name of road	Mileage	Date of receivership	Bonds of old company	Stock of old company	Total old company securities
Alabama, Tennessee & Northern	195	Nov. 22, 1915	$3,161,000	$7,350,000	$10,511,000
Artesian Belt	46	April 25, 1917	.....	70,000	70,000
Birmingham, Columbus & St. Andrews	38	Dec. 24, 1908	250,000	4,500,000	4,750,000
Boston & Maine	2,298	Aug. 29, 1916	56,644,060	42,655,191	99,299,251
Connecticut River	88	Aug. 31, 1916	4,744,000	3,233,300	7,977,300
Vermont Valley	25	Aug. 31, 1916	3,800,000	1,000,000	4,800,000
Boyne City, Gaylord & Alpena	90	Nov. 19, 1913	150,000	501,200	651,200
Cape Girardeau Northern	104	April 14, 1914	1,500,000	110,000	1,610,000
Chicago & Eastern Illinois	1,136	May 27, 1913	62,679,150	18,302,752	80,981,902
Chicago, Peoria & St. Louis	255	July 31, 1914	4,000,000	4,000,000	8,000,000
Cincinnati, Findlay & Fort Wayne	93	Mar. 12, 1917	1,150,000	1,250,000	2,400,000
Creston, Winterset & Des Moines	22	June 25, 1914	200,000	90,000	290,000
Dansville & Mt. Morris	15	June, 1894	150,000	50,000	200,000
Denver & Salt Lake	255	Aug. 16, 1917	12,514,000	12,182,500	24,696,500
Elkin & Allegheny	15	Dec. 13, 1915	482,000	476,300	958,300
Evansville & Indianapolis	146	May 27, 1913	2,500,000	2,000,000	4,500,000
Fellsmere Railroad	16	Jan. 5, 1917	.....	.....	.....
Florida, Alabama & Gulf	26	Feb. 27, 1914	500,000	150,000	650,000
Fort Smith & Western	250	Oct. 9, 1915	5,833,000	5,000,000	10,833,000
Georgia & Florida	320	Mar. 27, 1915	8,452,000	8,750,000	17,202,000
Georgia Coast & Piedmont	98	July 14, 1916	1,873,200	1,572,000	3,445,200
Gould Southwestern	18	April 14, 1914	8,929	51,000	59,929
Greenville & Western	23	Aug. 29, 1917	460,000	50,000	510,000
Greenville Northwestern	12	Dec., 1915	.....	.....	.....
Gulf, Florida & Alabama	157	May 9, 1917	4,446,000	4,410,000	8,856,000
Haynesville & Montgomery	9	Mar. 1, 1917	41,000	50,000	91,000
Houston & Brazos Valley	28	Nov. 27, 1915	420,000	24,000	444,000
International & Great Northern	1,160	Aug. 11, 1914	26,347,000	4,822,000	31,169,000
Kansas City & Memphis	56	July 18, 1914	862,000	852,000	1,714,000
Kansas City, Mexico & Orient	964	April 17, 1917	31,000,000	20,000,000	51,000,000
Kansas City Northwestern*	200	Feb., 1917	.....	.....	.....
Kansas City, Ozark & Southern	15	Dec. 23, 1914	.....	.....	.....
Leavenworth & Topeka	56	Mar. 31, 1916	250,000	50,000	300,000
Liberty-White	50	Nov. 12, 1914	7,550	300,000	307,550
Louisiana & North West	121	Aug. 23, 1913	2,250,000	2,300,000	4,550,000
Macon & Birmingham	97	Feb. 1, 1908	500,000	500,000	1,000,000
Marshall & East Texas	92	Jan. 25, 1917	1,180,000	200,000	1,380,000
Missouri & North Arkansas	365	April 1, 1912	8,340,000	8,340,000	16,680,000
Missouri, Kansas & Texas	1,744	Sept. 27, 1915	101,728,750	76,283,257	178,012,007
Missouri, Kansas & Texas of Texas	1,792	Sept. 27, 1915	35,638,054	10,152,500	45,790,554
Missouri, Oklahoma & Gulf	334	Dec. 12, 1912	9,363,521	8,474,000	17,837,521
Nevada Short Line	12	Jan., 1916	.....	.....	.....
New Mexico Central	116	Jan. 10, 1910	2,500,000	2,500,000	5,000,000
Orangeburg	17	June 17, 1916	.....	100,000	100,000
Pacific & Idaho Northern	90	Sept. 4, 1915	2,646,911	2,929,800	5,576,711
Palatine, Lake Zurich & Wauconda	15	Oct. 19, 1914	.....	230,000	230,000
Pine Bluff & Northern	10	Feb. 9, 1916	43,000	160,000	203,000
Pittsburg, Shawmut & Northern	184	Aug. 1, 1905	14,491,600	15,000,000	29,491,600
Richmond & Rappahannock	16	Oct. 25, 1917	458,000	500,000	958,000
Ridgefield & New York†	....	Nov. 2, 1917	.....	.....	.....
Rome & Northern	23	Feb. 28, 1911	.....	1,000,000	1,000,000
St. Louis & Missouri Southern	8	April 13, 1915	.....	.....	.....
St. Louis, El Reno & Western	42	Oct. 9, 1915	817,000	970,800	1,787,800
Salina Northern	81	July 27, 1917	936,000	1,164,000	2,100,000
San Antonio, Fredericksburg & Northern	25	Oct. 28, 1914	153,352	30,000	183,352
San Antonio, Uvalde & Gulf	316	Aug., 1914	4,413,000	280,000	4,693,000
Sharpsville	21	Jan. 20, 1897	68,779	350,000	418,779
Southwestern Railway	30	Nov. 12, 1917	354,000	35,000	389,000
Stockton Terminal & Eastern	19	June 11, 1917	84,400	263,900	348,300
Tennessee & North Carolina	37	Sept. 14, 1916	465,628	306,100	771,728
Tennessee Central	294	Dec. 31, 1912	12,232,900	7,941,450	20,174,350
Tennessee Railway	61	July 1, 1913	1,129,000	1,000,000	2,129,000
Texas & Pacific	1,944	Nov., 1916	55,883,000	38,763,810	94,646,810
Tidewater & Western	93	May 14, 1917	300,000	300,000	600,000
Toledo, Peoria & Western	247	July 2, 1917	4,895,000	4,076,900	8,971,900
Toledo, St. Louis & Western	451	Oct. 22, 1914	27,602,000	19,947,600	47,549,600
Trinity & Brazos Valley	315	June 16, 1914	8,760,000	304,000	9,064,000
Wabash, Chester & Western	65	July 15, 1914	690,000	1,250,000	1,940,000
Waupaca-Green Bay	3	Aug., 1917	75,000	1,400	76,400
Watauga & Yadkin River	29	Nov. 12, 1914	.....	3,138,600	3,138,600
Wichita Falls & Northwestern	329	June, 1917	.....	2,000,000	2,000,000
Williamsport & North Branch	56	Jan. 8, 1917	545,000	1,324,662	1,869,662
Totals	17,773	.....	532,968,784	335,968,022	868,936,806

*Formerly operated by B. F. Bush, of the Missouri Pacific, but put in separate receiver's hands February, 1917.
†Chartered but never built, and after charter expired company was put in receiver's hands to wind up its affairs.

& Pacific had been projected from Denver to Salt Lake along a line about 100 miles south of the Union Pacific and 125 miles north of the Denver & Rio Grande. It never got further than Craig, Colo., 256 miles. Opposed both by the Union Pacific interests and the Gould interests controlling the Denver & Rio Grande, it failed and was reorganized in 1913 under a plan, one of the provisions of which was that the city of Denver should build a tunnel through the continental divide and lease it to the Denver & Salt Lake and other

FORECLOSURE SALES IN 1917

Name of Company	Mileage	Funded Debt Outstanding	Stock Outstanding
*Catskill Mountain	...	.....	.....
Carthage & Copenhagen	10	$64,500	$62,900
‡Cincinnati, Bluffton & Chicago	52	1,500,000	1,125,000
Cincinnati, Hamilton & Dayton	392	‖56,866,000	8,248,175
Clarksburg & Northern	13	454,000	260,000
Colorado Midland	338	9,469,000	8,376,100
Denver, Laramie & Northwestern	57	§808,000	§25,660,900
Elberton & Eastern	22	300,000	200,000
Kanona & Prattsburgh	11	70,000	120,000
Marion & Eastern	7	.....	.....
Missouri Pacific	3,931	160,381,500	82,841,085
Pere Marquette	2,249	80,694,826	26,327,210
Pine Bluff & Northern	7	43,000	160,000
Pine Bluff, Sheridan & Southern	14	92,000	1,505
*San Antonio, Fredericksburg & Northern	25	153,352	30,000
St. Louis & Hannibal	103	630,000	462,000
St. Louis, Iron Mt. & Southern	3,555	142,644,120	44,394,730
Valdosta, Moultrie & Western	42	300,000	100,000
Webbers Falls	11	.....	.....
Wisconsin & Michigan	124	3,518,245	1,488,200
Totals	10,963	357,988,543	199,857,805

* This road was shown in the 1916 foreclosure sales but was resold in 1917 because the former sale was held to be illegal.
‡ This is an electric road but is standard gage and did both a freight and passenger business.
§ Figures taken from last available balance sheet of old company.
‖ Excluding 6,436,200 capital stock and funded debt of leased lines whose leases were sold.
¶ Road sold on December 4, 1917, but bid subject to approval of court meeting December 27.

roads, but on July 8, 1914, the supreme court of the state of Colorado held this undertaking of the city illegal. As a local road the project was unable to pay expenses and fixed charges.

The Toledo, Peoria & Western is a company controlled jointly by the Pennsylvania and the Chicago, Burlington & Quincy. The Burlington and the Pennsylvania each own

RECEIVERSHIPS ESTABLISHED IN 1917

Name of Company	Mileage	Funded Debt Outstanding	Stock Outstanding
Artesian Belt	2	.....	$70,000
Cincinnati, Findlay & Fort Wayne	93	$1,150,000	1,250,000
Denver & Salt Lake	256	12,514,000	12,182,500
Fellsmere Railroad	16	.....	.....
Greenville & Western	23	460,000	50,000
Gulf, Florida & Alabama	157	4,446,000	4,410,000
Haynesville & Montgomery	9	41,000	50,000
Kansas City, Mexico & Orient	964	5,640,200	
†Kansas City Northwestern	...	.....	.....
Marshall & East Texas	92	1,180,000	200,000
Richmond & Rappahannock	16	458,000	500,000
‡Ridgefield & New York	...	.....	.....
Salina Northern	81	1,150,000	1,163,000
Southwestern Railway	30	354,000	35,000
Stockton Terminal & Eastern	19	84,400	263,900
Tidewater & Western	93	300,000	300,000
Toledo, Peoria & Western	247	4,895,000	4,076,900
Waupaca-Green Bay	3	75,000	1,400
Wichita Falls & Northwestern	329	.....	2,000,000
Williamsport & North Branch	56	545,000	1,324,662
Totals	2,486	33,292,600	27,877,362

* The reorganized company had not sold all of its purposed securities when a receiver was appointed. The amount shown under funded debt, however, is the amount of notes that had been sold and are outstanding.
† This is not a new receivership; see table of roads now in receivers' hands.
‡ See large table showing roads now in receivers' hands.

about $2,011,200 of the outstanding $4,076,900 stock. The road was placed in the hands of its president as receiver because of default on the 4 per cent. interest on its $4,895,000 first mortgage bonds.

By far the most important foreclosure sale and reorganization was that of the Missouri Pacific system, which included the 3,931 miles of the old Missouri Pacific and 3,555 miles of the old St. Louis, Iron Mountain & Southern. Prior to the receivership of the Missouri Pacific this company and its subsidiary—the St. Louis, Iron Mountain & Southern—had been controlled by the Gould estate. A reorganization plan, however, was worked out by Kuhn, Loeb & Co., New York, and it was under this plan that foreclosure took place. The

SUMMARY OF FORECLOSURE SALES IN 42 YEARS

Year	No. of roads	Miles	Bonds and stocks
1876	30	3,840	$217,848,000
1877	54	3,875	198,984,000
1878	48	3,906	311,631,000
1879	65	4,909	243,288,000
1880	31	3,775	263,882,000
1881	29	2,617	137,923,000
1882	16	867	65,426,000
1883	18	1,354	47,100,000
1884	15	710	23,504,000
1885	22	3,156	278,394,000
1886	45	7,687	374,109,000
1887	31	5,478	328,181,000
1888	19	1,596	64,555,000
1889	25	2,930	137,815,000
1890	29	3,825	182,495,000
1891	21	3,223	169,069,000
1892	28	1,922	95,898,000
1893	25	1,613	79,924,000
1894	42	5,643	318,999,000
1895	52	12,831	761,791,000
1896	58	13,730	1,150,377,000
1897	42	6,675	517,680,000
1898	47	6,054	252,910,000
1899	32	4,294	267,534,000
1900	24	3,477	190,374,000
1901	17	1,139	85,808,000
1902	20	693	39,788,000
1903	13	555	15,885,000
1904	13	524	28,266,000
1905	6	679	20,307,000
1906	8	262	10,400,000
1907	6	114	13,777,000
1908	3	138	2,547,000
1909	12	2,629	250,033,000
1910	17	1,100	93,660,109
1911	13	1,386	40,741,453
1912	12	661	25,910,990
1913	6	1,159	86,163,850
1914	9	1,470	83,189,500
1915	11	3,914	285,258,782
1916	26	8,355	703,444,855
1917	20	10,963	557,846,348

foreclosure, therefore, involved an important change in control, and since the Missouri Pacific owns about 30 per cent. of the stock of the Denver & Rio Grande, this latter led to a diminution in the extent of the control of the Goulds over

SUMMARY OF RECEIVERSHIPS FOR 42 YEARS

Year	No. of roads	Miles	Bonds and stocks
1876	42	6,662	$467,000,000
1877	38	3,637	220,294,000
1878	27	2,320	92,385,000
1879	12	1,102	39,367,000
1880	13	885	140,265,000
1881	5	110	3,742,000
1882	12	912	39,074,000
1883	11	1,990	108,470,000
1884	37	11,038	714,755,000
1885	44	8,836	385,460,000
1886	13	1,799	70,346,000
1887	9	1,046	90,318,000
1888	22	3,270	186,814,000
1889	22	3,803	99,664,000
1890	26	2,963	105,007,000
1891	26	2,159	84,479,000
1892	36	10,508	357,692,000
1893	74	29,340	1,781,046,000
1894	38	7,025	395,791,000
1895	31	4,089	369,075,000
1896	34	5,441	275,597,000
1897	18	1,537	92,909,000
1898	18	2,069	138,701,000
1899	10	1,019	52,285,000
1900	16	1,165	78,234,000
1901	4	73	1,627,000
1902	5	278	5,835,000
1903	9	229	18,823,000
1904	8	744	36,069,000
1905	10	3,593	176,321,000
1906	6	204	55,042,000
1907	7	317	13,585,000
1908	24	8,009	596,359,000
1909	5	859	78,095,000
1910	7	735	51,427,500
1911	5	2,606	210,606,882
1912	13	3,784	182,112,497
1913	17	9,020	477,780,820
1914	22	4,222	199,571,446
1915	12	20,143	1,070,808,628
1916	9	4,439	208,159,689
1917	19	2,486	61,169,962

the Denver & Rio Grande. The plan of reorganization left undisturbed $128,460,620 underlying bonds, which included all of the St. Louis, Iron Mountain & Southern bonds, except $29,423,000 first and refunding 6's and equipment

obligations maturing June 30, 1918. The $24,845,000 Missouri Pacific 6 per cent notes, due June 1, 1916, were paid, as were also $3,861,000 equipment trust certificates maturing June 30, 1915, up to and including June 30, 1918. A total of $123,169,000 bonds and notes were exchanged for securities in the new company. The cash requirements of the plan, which totaled $41,419,792, were raised by an assessment of $50 per share on the $82,839,581 Missouri Pacific stock outstanding in the hands of the public. The new company issued $91,322,442 bonds, $76,751,635 new convertible 5 per cent preferred stock and $82,839,585 in exchange for the stock and cash assessment of the old company and the aforementioned $123,169,000 old securities in exchange for new. This plan was dated July 1, 1915, and became effective June 1, 1917, with some modifications.

The Pere Marquette, which had been in the hands of receivers since April, 1912, was sold under foreclosure of the consolidated mortgage, refunding mortgage, improvement and refunding general mortgage, Flint & Pere Marquette consolidated mortgage and first mortgage, Port Huron first mortgage, Grand Rapids, Belding & Saginaw first mortgage, Chicago & West Michigan first mortgage, Chicago & North Michigan first mortgage, Pere Marquette of Indiana first mortgage, and Detroit, Grand Rapids & Western first consolidated mortgage. The reorganization plan provided for wiping out all of the old mortgages on the property except $5,870,000 undisturbed collateral trust bonds on the Canadian lines. The total amount of bonds, equipment trust certificates, notes and receiver's certificates which were wiped out by exchange into securities of the new company was $81,142,919, calling for interest charges annually of $3,877,540. The total interest charges, including the interest on the Canadian undisturbed bonds, was $4,127,340. The total bonds issued under the plan of reorganization, including the undisturbed Canadian bonds, was $36,325,000, with fixed interest charges of $1,687,760. There is approximately $6,000,000 cash provided for in the reorganization plan for working capital, betterments, etc., for the new company.

The most important reorganization which took place during the year from the point of view of mileage and amount of securities is not shown in the table of foreclosures because the Chicago, Rock Island & Pacific, which at the beginning of the year was in the hands of receivers, was reorganized without a foreclosure sale. The reorganization was effected by the sale of $29,743,889 7 per cent preferred stock (the company had outstanding approximately $75,000,000 common stock) and the sale of $5,000,000 6 per cent preferred stock to former directors to provide for floating debt, reorganization expenses, etc., and by the exchange of $20,000,000 debentures for $20,000,000 new preferred stock. The Chicago, Rock Island & Pacific operates 8,131 miles.

As shown by the first table, there is still a large mileage in the hands of receivers, the most important roads being the Boston & Maine system, the International & Great Northern, the Missouri, Kansas & Texas system, and the Texas & Pacific.

Canadian War Records Photo.

Yvonne, the Railway Crossing Gate Keeper, and an Obliging Canadian

Dividend Changes

THE DIVIDEND CHANGES IN 1917 as compared with 1916 were comparatively few and unimportant, with the exception of the 10 per cent extra dividend on the Chicago, Burlington & Quincy stock. The stock, however, is held half by the Great Northern and half by the Northern Pacific, so that this extra dividend was not directly a disbursement to the public. The continuance of extra dividends on the Union Pacific, which gives stockholders 10 per cent a year, although the regular annual rate is 8 per cent, is a manifestation of the Union Pacific's ability to earn a comfortable margin over 10 per cent, even after disposal of its Southern Pacific stock.

The initial dividends noted for the Pere Marquette and Pittsburgh & West Virginia, in the table, represent the return which investors are getting on the new money which was put up for these properties in the course of very drastic reorganizations under which bond interest was scaled down to only a fraction of what it had been before:

DIVIDEND CHANGES

	Declared in 1917	Declared in 1916	Present annual rate	Annual rate in 1916
Alabama Great Southern, common	7	8	5	5
Bangor & Aroostook	4	3	4	3
Bellefont Central	2	1	1	1
Boston & Maine—				
Vermont Valley	None	None	None	10
Buffalo & Susquehanna, common	7	5	5	5
Chicago, Burlington & Quincy	[a]18	8	8	8
Chicago, Milwaukee & St. Paul	4½	5	4	5
Chicago, Rock Island & Pacific—				
7 per cent pref.	3½	None	7	..
6 per cent pref.	3	None	6	..
Chicago, St. Paul, Minneapolis & Omaha, common	7	6	7	5
Colorado & Southern, 2nd pref	2	None	2	None
Detroit & Mackinac, common	2½	5	5	5
Grand Trunk (of Canada)—				
Guaranted stock	None	4	None	4
Preference stock	None	4	None	4
Hocking Valley	5½	4	[b]	[b]
Illinois Central	7	6	6	6
Morris & Essex	7¾	7	7¾	7
Norfolk & Western	[c]8	7¾	7	7
Pennsylvania Company	6	8	6	8
Pere Marquette, prior preference	$2.81⅓	..	5	..
Pittsburgh & West Virginia pref	3	None	[d]6	None
Pittsburgh, Cincinnati, Chicago & St. Louis	2½	[e]	..	..
Rutland	2	None	..	..
Southern Railway	2½	None	5	None
Union Pacific, common	[f]10	[f]10	8	8
Wabash, pref. A	4	1	4	4

[a] An extra dividend of 10 per cent was declared in August, 1918.

[b] Hocking Valley practice is to declare dividends according to rate of earnings and there is, therefore, apparently no regular annual rate.

[c] In 1917 an extra dividend of 1 per cent was declared and in 1916 the rate was changed and an extra dividend of 1 per cent was declared.

[d] An initial dividend of 1½ per cent was declared in August from the earnings of the quarter ended June 30.

[e] The dividend of 2½ per cent declared in August was the first dividend on the new consolidated stock of the P. C. C. & St. L., which was the successor company to the P. C. C. & St. L. Railway, the Vandalia; Pittsburgh, Wheeling & Kentucky; Anderson Belt, and Chicago, Indiana & Eastern. Prior to the consolidation the annual rate in 1916 on the preferred stock of the P. C. C. & St. L. was 6 per cent and the last dividend on the common was 5 per cent and on the Vandalia stock 4 per cent.

[f] In December, 1916, a 2 per cent extra dividend was declared and in 1917 extra dividends were declared quarterly of half of one per cent.

1300 Miles of Railroad Abandoned

Unprofitable lines, some in operation for a quarter of a century, at last sold for junk.

THIS IS THE FIRST YEAR since the first railroad in the United States was built, in 1831, that there has been any considerable mileage of road voluntarily abandoned by its owners or taken up and sold as junk. The *Railway Age* has kept a record for 35 years of new railroad construction, and in one year this amounted to over 6,000 miles and in a number of years has been over 5,000 miles, but it has never before been worth while to keep a record of the few miles of logging road or spur tracks taken up. In 1917, however, there was 451 miles of railroad actually taken up or in the process of being taken up and sold for junk. In addition there was 491 miles of road on which operation was abandoned, and 396 miles of road which the owners had asked permission from State commissions or legislatures to abandon; and, as a matter of fact, this latter figure does not represent all of the road, which would be taken up and sold as junk if the owners could get permission so to do.

State commissions have in the past almost invariably refused to permit the abandonment and actual taking up of railroad mileage. It has been necessary to go to courts, but the courts have apparently definitely established the rule that owners of an unprofitable railroad may discontinue the operation of it and dispose of the rails, bridges, etc., as junk.

The owners of many of the roads listed probably would ascribe their difficulties to pernicious regulation by State commissions. There is quite a world of romance and pathos surrounding many of these railroad ventures which have at last proved failures. Hopes, sacrifices, great expectations, rebellion against the laws of economics—this is the stuff of which most of these failures is made. In most cases it was bad business judgment, as well as bad regulation, which caused the failure, but it is highly significant that the projects should be given up *now* when the effect on railways in general are most manifest.

The abandonment, on a considerable scale, of railroad mileage is worthy of thoughtful study. It is startling to find that more railroad mileage was abandoned or about to be abandoned than was built in 1917. The faith which underlay the building of these roads was the faith which has so often been justified in the rapidity of growth of population and expansion of business of this country. There has been no lessening in the need for transportation, and yet after years of hanging on, in many cases, the owners of over 1,300 miles of railroad have decided to quit.

The present high price of old rails, scrap iron, etc., is a contributing factor, but only in a superficial sense. It is no real underlying cause of the final abandonment of hope.

The Farmville & Powhatan, the predecessor of the Tidewater & Western, was built and merged with the Bright Hope Railway in 1889-90. The development of Powhatan and

Name of road	Operation discontinued but track not taken up (Miles)	Permission asked from commission or legislature to take up track or abandon operation (Miles)	Mileage of track actually taken up or in process of being taken up (Miles)
Alton & Jacksonville	..	[a]29	..
Arkansas (short lumber lines)	..	..	25
Bedford Stone Railway	..	..	[b]3
Bedlington & Nelson	..	..	12
Belington & Northern	6	..	..
Big Stone Gap & Powells Valley	..	..	5
Buffalo, Attica & Arcade	..	..	27
Cape Girardeau Northern (Farmington, Mo., to Saline Junction, and Perryville to Jackson)	64	..	..
Carolina & Western	12	..	..
Catskill Mountain Railroad	27	..	..
Cincinnati, Hamilton & Dayton (Berlin, Ohio, to Dean)	..	..	37
Chicago, Anamosa & Northern	..	..	56
Chicago, Bluffton & Cincinnati	52	..	..
Colorado, Kansas & Oklahoma	51	..	..
Chicago, Milwaukee & St. Paul (Pittsville Junction, Wash., to Arpin)	..	15	..
[c]Chicago, South Bend & Goshen	..	..	20
Chicago, Zeigler & Gulf	16	..	..
Clarksburg Northern	13	..	..
Columbus & Southern	23	..	..
Creston, Winterset & Des Moines	22	..	..
Crystal River & San Juan	[d]8	..	..
Denver, Boulder & Western	..	47	..
Denver, Laramie & Northern—			
(Successor to Denver, Laramie & Northwestern)	..	..	..
(Utah Junction, Colo., to Boulder Valley Junction, and Elm to Greeley)	24	..	..
Gary & Connecting	..	[e]18	..
Great Northern—			
Chisholm, Minn., to Flanders	..	..	1
Belleville, Wash., to Lukon	..	..	11
Greenville & Western	23	..	..
Greenville Northwestern[e]	12	..	..
Hanysville & Montgomery	[f]9	..	..
Iowa & Omaha Short Line	..	..	12
Lake Hancock & Clermont	..	..	[g]
Louisiana & Arkansas	..	[h]25	..
Marshall & East Texas	..	192	..
New Jersey & Pennsylvania	..	..	26
New Mexico Central	..	[i]116	..
New York & Pennsylvania	57	..	..
New York, New Haven & Hartford (Saybrook Point to Fenwick)	..	..	1
Ocklawaha Valley Railroad	..	[k]54	..
Ocmulgee Valley Railroad	..	..	21
Ohio River & Columbus	24	..	..
Oregon State Owned Road	14	..	..
Pittsburgh, Westmoreland & Somerset	34	..	..
Tidewater & Western	..	..	93
Webbers Falls	..	..	11
Wellsville & Buffalo	..	..	90
Total	491	396	451

[a]This is an electric interurban and the Illinois Public Service Commission

at last advices had not rendered its decision in the application to discontinue and dismantle the road.

[b]At last accounts the company was only awaiting the removal of some property of shippers to tear up the rails.

[c]This electric interurban road was built as part of a project to build an air line electric road from New York to Chicago. This was the only part of that projected road which was ever actually built.

[d]Permission has been granted by the Colorado Public Utilities Commission to discontinue operation only until April 1, 1918.

[e]This is an interurban road and the application to abandon is still pending before the Public Service Commission of Indiana.

[e1]Operation has been discontinued for 20 months.

[f]Operation was to have been discontinued on December 31 and presumably was discontinued.

[g]Small logging road. Mileage is not ascertainable.

[h]Application was made to the Arkansas commission to entirely discontinue the operation of 6 miles between Pine Bluff and Sheridan, and to discontinue the entire 25 miles of line as a common carrier. The first application was denied by the commission and the second is now under advisement.

[i]An application is now before the courts to have the receiver dispose of such parcels of the road as would yield the most advantageous price. If a decree is entered following the recommendation of the receiver, that part of the line between Marshall, Tex., and Eser, 73 miles, will presumably be dismantled and sold as junk.

[j]A petition supplemental to a petition asking for the appointment of a new receiver asks that the road be dismantled and sold. The case is now before the supreme court of the state of New Mexico.

[k]Permission was asked the Railroad Commission of Florida to discontinue operation. Presumably the intention was to dismantle the road and sell it for junk. Permission, however, was refused by the commission.

Chesterfield counties, Virginia, during more than 25 years failed to make the Tidewater & Western a paying railroad.

Some of the roads listed were built with the money and labor of farmers. The Chicago, Anamosa & Northern and the Creston, Winterset & Des Moines, both in Iowa, were built in this way. Both of these roads were the result of a desire for transportation facilities—the farmers wanted railroad facilities and assessed themselves to pay for building the roads. In the case of the Denver, Laramie & Northern, however, the money to build the road was raised not in the territory served—Central Colorado—but from Kansas farmers' savings.

The list is pretty surely incomplete, even for all roads that have actually been abandoned; neither does it show some very important roads which the owners wish they could abandon. It is probable that many holders of Kansas City, Mexico & Orient securities would be glad to see that road torn up and sold for junk. Raising the money to build it was one of the most remarkable feats of promotion in American railroad history. It was an example of how deeply fixed was the investor's faith in the future of American railroads.

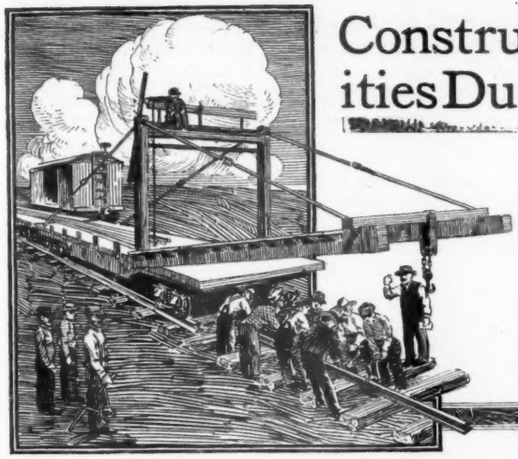
The significance of the present abandonment of some hundreds of miles of railroad is that it shows the faith which made possible the building of the Kansas City, Mexico & Orient not shaken but actually destroyed. The abandonment of railroads in the past year marks a very important stage in the economic development of the country.

Canadian War Records Photo.

Wounded Canadians, Who Took Part in the Capture of Hill 70, Leaving a Casualty Clearing Station for "Blighty"

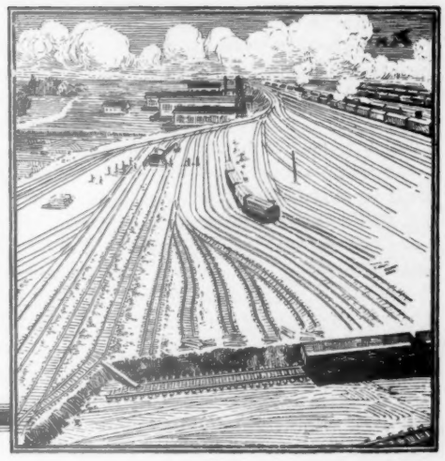
Canadian War Records Photo.

Canadians Use Slate and Bad Coal for Ballasting Light Railroads Near Lens



Construction Activities During the Year

Total Mileage of New Lines Completed in 1917 Compares Favorably With That of the Two Preceding Years



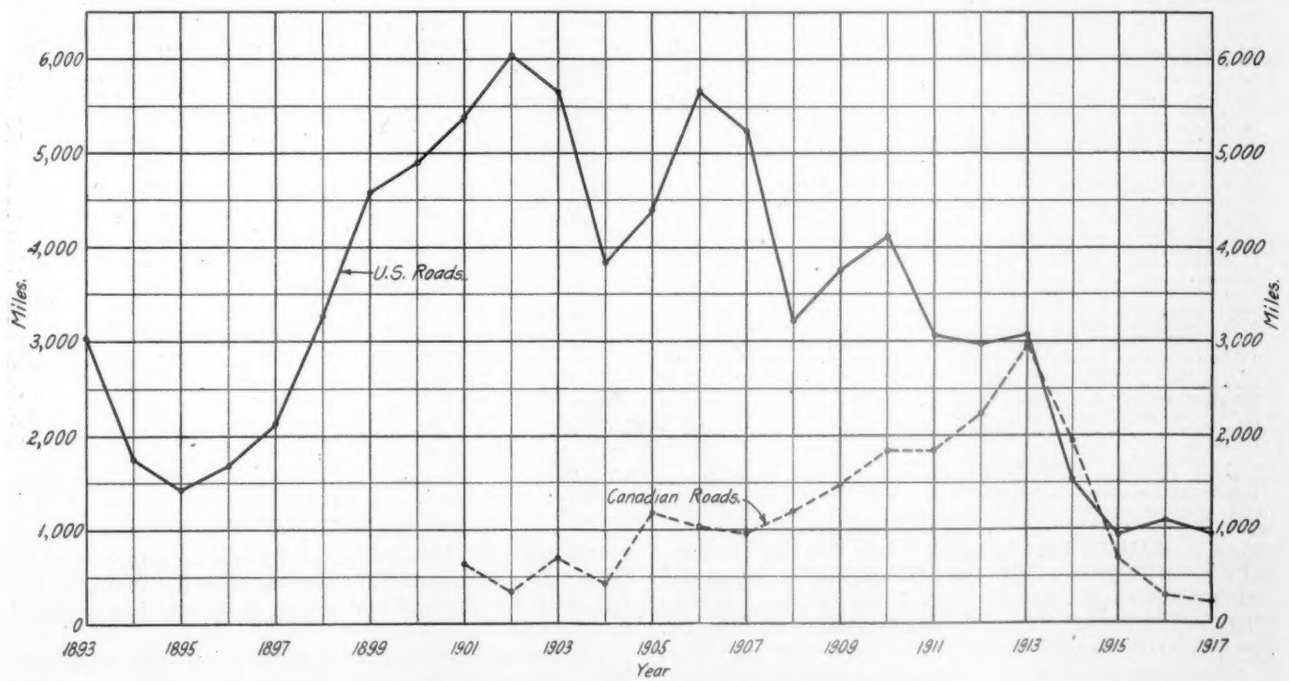
DURING 1916 a total of 962 miles of new line was completed in the United States and 207 miles in Canada. The diagram and table provide an interesting comparison of these figures with the corresponding results in previous years. The construction of new railways in the United States during the last three years, which has very nearly equaled the round figure of 1,000 miles per annum is far below any corresponding three years since the Civil War, even during the panic period of the middle nineties, the mileage constructed during 1894, 1895 and 1896 exceeded that of the last three years by 62 per cent.

In second-track construction the showing of the past year is somewhat better, 613.41 miles having been completed as compared with 312.31 for 1916, 356.28 for 1915, and 565.58 for 1914. It is small, however, as compared with 1,263 miles of second track completed in 1913 and 1,072 miles in 1912. Of third track 35.78 miles were completed, and of fourth or more main tracks 28.37 miles. No second or multiple track construction is reported for Canada during the year.

California leads this country in railway construction with the completion of 108.89 miles of new line, Alaska is second with 108 miles completed on the Government Railway, Montana is third with 94.4 miles, followed by Utah, with 67.20 miles, Texas with 63.50 miles, and Pennsylvania with 61.89 miles. The geographic distribution of these five leading states is indicative of the scattered location of the new mileage which permits of no precise statement other than that the increased mileage was less than 10 miles in each of 20 states and that all of New England, New York, New Jersey, Delaware and Maryland, are included in this group.

The longest continuous piece of railroad completed during the year is 60 miles of main line on the United States Government Railway from Matanuska, Alaska, to Montana creek. The next longest piece is on the Hetch Hetchy in California, 52 miles. Of the second track work, that done by the Union Pacific in Wyoming, 95.11 miles, and by the Southern Railway in South Carolina, 76.6 miles, are projects far surpassing anything else of the kind done in the country during the year.

In construction activities other than new line or addi-



Curves of United States and Canadian Construction Mileage

tional tracks, yards and engine terminals are the principal items, although work is under way on large passenger terminals at Chicago, St. Paul, Minn., and one of smaller magnitude at Jacksonville, Fla. Another $4,000,000 is also being spent on the Kansas City Terminal to provide adequate approaches to the station for certain of the railroads.

On the whole, however, most of the improvements in progress during the year have been directed toward facilitating the handling of freight. As a rule the improvements have not been of a large scale, the tendency being rather toward smaller increases in the facilities at as many points as possible. Exceptions to this rule include the Cedar Hill yard of the New Haven and the terminal improvements at Indianapolis, Ind.

Auxiliary terminal facilities have had a prominent part in this year's activities. New coal docks for the Pennsylvania Railroad and the Baltimore & Ohio have been completed at Baltimore, those of the latter being marked by a decided departure from usual practice. The Norfolk & Western has built two warehouses at Lamberts Point, at a cost of $1,800,000; the Chicago & North Western has completed a large grain elevator at Chicago, and has awarded contracts for another one at Council Bluffs, Iowa, and the Pennsylvania has placed an elevator in service at Erie, Pa. The $4,000,000 local freight terminal now being completed by the Pennsylvania Lines at Chicago, is a structure worthy of special mention. Projects of recent inception include coal piers for the Baltimore & Ohio on Staten Island and for the Central of New Jersey at Jersey City.

Grade separation work, while aggregating a smaller expenditure than in former years and involving few new projects is still occupying the attention of engineering forces. At Chicago the Baltimore & Ohio; the Chicago & Western Indiana; the Chicago, Rock Island & Pacific, and the Pennsylvania Lines are engaged on work started previous to the beginning of this year. The Cleveland, Cincinnati, Chicago & St. Louis and the Indianapolis Union Railway are occupied with work of this kind at Indianapolis, the former having completed a similar project at Columbus, Ohio, during the year.

In Canada the longest piece of new line constructed is on the Edmonton, Dunvegan & British Columbia in Alberta, 73.3 miles, while the Canadian Northern completed the largest amount of new mileage in aggregate, 92.3 miles. Other improvements of importance include the terminal work of the Great Northern and the Canadian Northern at Vancouver and the Toronto Union Station on which work is 55 per cent complete. The line through the tunnel of the Canadian Northern, Mount Royal, at Montreal, was placed in operation in April.

The comparative amounts of various classes of new tracks built and other important improvement work under way during 1917 are shown below by states.

MILES OF NEW LINE COMPLETED IN THE UNITED STATES SINCE 1893.

1893	3,024	1906	5,623
1894	1,760	1907	5,212
1895	1,420	1908	3,214
1896	1,692	1909	3,748
1897	2,109	1910	4,122
1898	3,265	1911	3,066
1899	4,569	1912	2,997
1900	4,894	1913	3,071
1901	5,368	1914	1,532
1902	6,026	1915	933
1903	5,652	1916	1,098
1904	3,832	1917	979
1905	4,388		

NEW TRACK BUILT IN 1917.

UNITED STATES—	No. Cos. building	Miles: First track	Second track	Third track	Fourth or more track	Total
Alabama	2	6.30	36.64	.....	.....	42.94
Alaska	1	108.00	.....	.....	.....	108.00
Arkansas	3	10.05	.....	.....	.....	10.05
California	7	108.89	.....	.....	.....	108.89
Colorado	1	.62	3.77	.....	.....	4.39
Connecticut	1	.21	.....	.45	3.50	4.16
Florida	1	5.00	.....	.....	.....	5.00
Georgia	3	18 43	23.71	.....	.....	42.14
Idaho	2	23.36	.....	.....	.....	23.36
Illinois	4	9.01	24.89	11.80	4.10	49.80
Indiana	..	.....	47.85	.....	.....	47.85
Kansas	1	21.50	27.12	.....	.....	48.62
Kentucky	3	29.80	13.20	1.09	.....	44.09
Louisiana	5	39.80	.....	.....	.....	39.80
Maryland	1	1.68	6.70	.....	.....	8.38
Massachusetts	..	.....	.....	1.21	1.99	3.20
Michigan	4	7.83	2.13	.....	.....	9.96
Minnesota	1	11.75	22.14	.....	.....	33.89
Mississippi	4	28.42	12.50	.....	.....	40.92
Missouri	2	3.55	.79	.....	.....	4.34
Montana	2	94.40	36.00	.....	.....	130.40
Nevada	2	10.00	.....	.....	.....	10.00
New Jersey	2	2.70	3.96	4.83	3.31	14.80
New Mexico	1	.16	5.11	.....	.....	5.27
New York	3	3.74	8.45	12.50	12.46	37.15
North Carolina	5	16.85	4.50	.....	.....	21.35
Ohio	1	27.19	18.18	.....	.....	45.37
Oklahoma	3	23.80	18.20	.....	.....	42.00
Oregon	2	17.00	.....	.....	.....	17.00
Pennsylvania	15	61.89	21.62	2.70	1.77	87.98
South Carolina	1	21.50	82.90	.....	.....	104.40
South Dakota	1	.19	.....	.....	.....	.19
Tennessee	4	27.81	.70	.....	.....	28.51
Texas	3	63.50	41.35	.....	.....	104.85
Utah	2	67.20	15.82	.....	.....	83.02
Virginia	3	19.73	33.35	.....	.....	53.08
Washington	3	13.68	.....	.....	.....	13.68
West Virginia	6	35.54	6.72	.....	.....	42.26
Wisconsin	2	29.99	.....	1.20	1.24	32.43
Wyoming	1	7.81	95.11	.....	.....	102.92
Totals	108	978.88	613.41	35.78	28.37	1656.44
Canada	6	206.95	.....	.....	.....	206.95

NEW TRACK BUILT IN 1916.

UNITED STATES—	No. Cos. building	Miles: First track	Second track	Third track	Fourth or more track	Total
Alabama	4	33.50	2.50	.....	.....	36.00
Alaska	1	50.00	.....	.....	.....	50.00
Arizona	1	8.50	.....	.....	.....	8.50
Arkansas	7	13.21	1.36	.....	.....	14.57
California	5	78.77	.....	.....	.....	78.77
Colorado	1	1.80	.....	.....	.....	1.80
Connecticut	..	.....	.55	8.72	5.02	14.29
Florida	5	44.05	.....	.....	.....	44.05
Georgia	3	52.50	26.06	.....	.....	78.56
Idaho	2	19.59	.....	.....	.....	19.59
Illinois	3	10.11	36.15	.25	.14	46.65
Indiana	..	.....	14.38	.....	.....	14.38
Kansas	3	96.31	.....	.....	.....	96.31
Kentucky	1	24.00	2.26	.....	.....	26.26
Louisiana	2	29.81	.....	.....	.....	29.81
Maryland	1	3.50	5.62	.....	.....	9.12
Massachusetts	1	1.00	.....	.....	.....	1.00
Michigan	3	37.00	19.31	.....	.....	56.31
Minnesota	2	10.20	14.90	.....	.....	25.10
Mississippi	4	36.90	19.00	.....	.....	55.90
Missouri	..	.....	3.00	.....	.....	3.00
Montana	3	99.36	.....	.....	.....	99.36
New Jersey	3	2.56	.89	.....	2.02	5.47
New Mexico	1	1.46	.....	.....	.....	1.46
New York	3	5.63	.68	6.17	4.32	16.80
North Carolina	3	23.00	6.50	.....	.....	29.50
North Dakota	2	36.94	.....	.....	.....	36.94
Ohio	2	7.10	25.75	2.06	1.76	36.67
Oklahoma	3	22.80	6.19	.....	.....	28.99
Oregon	4	65.80	1.75	.....	.....	67.55
Pennsylvania	10	43.16	6.20	.14	.46	49.96
South Carolina	2	91.76	12.20	.....	.....	103.96
South Dakota	..	.....	10.30	.....	.....	10.30
Tennessee	4	19.47	4.02	.....	.....	23.49
Texas	3	10.86	.....	.....	.....	10.86
Utah	..	.....	2.90	.....	.....	2.90
Virginia	3	14.58	82.69	.....	.....	97.27
Washington	5	55.65	.....	.....	.....	55.65
West Virginia	4	28.27	.....	.....	.....	28.27
Wisconsin	3	11.26	7.15	.....	.....	18.41
Wyoming	1	8.00	.....	.....	.....	8.00
Totals	108	1098.41	312.31	17.34	13.72	1441.78
Canada	11	290.04	7.90	.....	.....	297.94
Panama	1	40.00	.....	.....	.....	40.00

UNITED STATES

ALABAMA

	Miles	Miles
First Track		
Birmingham, Selma & Mobile—Nichols to Stewart	4.00	
Dauphin Island Railway & Dock Co.—Between Alabama Port and Cedar Point	2.30	6.30
Second Track		
Alabama Great Southern—Not specified	32.64	
Birmingham, Selma & Mobile—Nichols to Stewart	4.00	36.64

Other Important Work Under Construction

St. Louis-San Francisco—Big Warrior lift bridge at Cordova, cost $125,000, 30 per cent completed. Strengthening bridges between Thayer, Mo., and Birmingham, Ala., cost $300,000, 95 per cent completed.

ALASKA

First Track	Miles	Miles
United States Government Railway—Indian Creek to Rabbit, 16 miles; Matanuska to Montana Creek, 60 miles; Clear Creek to Nenana, 12 miles; Goldstream to Happy station, 3 miles; Matanuska branch, King to Chickaloon, 14 miles; Eska Creek branch, Eska to Emery, 3 miles; total	108.00	108.00

Other Important Work Under Construction

United States Government Railway—Building from Kern Creek to Indian Creek, 16 miles; Montane Creek to Clear Creek, 191 miles; Nenana to Goldstream, 46 miles, and Happy station to Fairbanks, 8 miles; total, 261 miles; will dredge harbor and build dock on Knick arm at Anchorage at a cost of $250,000.

ARIZONA

Other Important Work Under Construction

Apache Railway—Building from Holbrook to Copley's 72 miles; contractors, Webb-Webb & Dewitt, Snowflake, Ariz.; Miller Construction Company, San Bernardino, Cal., and Apache Railway Company by force account.

ARKANSAS

First Track		
Cairo, Truman & Southern—Weona south	0.50	
Fourche River Valley & Indian Territory Railway—Thornburg to Pershing	5.50	
Missouri Pacific—Dalhoff to Camp Pike Cantonment	4.05	10.05

Other Important Work Under Construction

Chicago, Rock Island & Pacific—Raising grade of track on St. Francis Levee, increasing waterways, etc., Briarck to West Memphis, cost $160,000 90 per cent completed.

Missouri Pacific—Dredging new channel, place revetment on right and left bank of Arkansas river near Watson cost $215,000, 30 per cent completed, 210 ft. vertical lift span and 2 concrete piers over Arkansas river near Watson cost $180,000, 10 per cent completed.

CALIFORNIA

First Track		
Colusa & Hamilton (So. Pac.)—North of Glenn	1.70	
Hetch Hetchy—Between Hetch Hetchy Junction and Hetch Hetchy Damsite	52.00	
Indian Valley—Paxton to Englemine	21.50	
Inter-California (So. Pac.)—Calipatria to Westmoreland	12.79	
Los Angeles & Salt Lake—Pico to Whittier	2.80	
San Diego & Southeastern—Santee to Lakeside	3.10	
Western Pacific—Reno Junction towards Reno, Nev., 11.00* miles; Loyalton branch south of Loyalton, 4.00 miles; total	15.00	108.89

*Relocation work on part of N. C. O. Ry.

Other Important Work Under Construction

Colusa & Hamilton (So. Pac.)—Building from near Glenn to near Hamilton, 12.87 miles.

Los Angeles & Salt Lake—Building from Whittier to Santa Ana, 23.3 miles; land bought for site of new freight terminal at Los Angeles, $700,000; plans being made for concrete warehouses and freight offices to cost $200,000; building new car shop at Los Angeles to cost $100,000.

Minkler Southern (A. T. & S. F.)—Building from Lindsay to Porterville, 12 miles.

San Diego & Arizona—Building from Campo to Carriso Pass, 38 miles; contractors, Twohy Brothers Company, San Diego, on 21 miles, and Utah Construction Company, Ogden, Utah, on 17 miles.

Southern Pacific—New general office building at San Francisco, cost $1,700,000 completed. New Terminal yards and shops at Visitacion, cost $1,325,000, 62½ per cent completed.

COLORADO

First Track		
Union Pacific—From Puritan branch to Munroe Mines	0.62	0.62
Second Track		
Atchison, Topeka & Santa Fe—Not specified	3.77	3.77

CONNECTICUT

First Track		
New York, New Haven & Hartford—At Derby	0.21	0.21
Third Track		
New York, New Haven & Hartford—Groton to Midway	0.45	0.45
Fourth Track		
New York, New Haven & Hartford—Groton to Midway	2.35	2.35
Fifth Track		
New York, New Haven & Hartford—At New Haven	0.61	0.61
Sixth Track		
New York, New Haven & Hartford—At New Haven	0.54	0.54

Other Important Work Under Construction

New York, New Haven & Hartford—Reconstruction of bridge over Connecticut river at East Hartford, cost $388,000, 40 per cent completed; bridge over Mystic river at Mystic, cost $170,000, 20 per cent completed; bridge over Thames river at New London, cost $2,720,000, 52 per cent completed; freight yard at Cedar Hill, New Haven, cost $2,504,000, 8 per cent completed; engine facilities at Danbury, cost $204,200, completed; new passenger station with subways and track changes at New Haven under way, will be completed in about two years.

FLORIDA

First Track		
Kissimmee River (S. A. L.)—In Polk county	5.00	5.00

Other Important Work Under Construction

Atlantic Coast Line—Building Sebring to Immokalee, 81 miles; Palmdale to Moorehaven, 16 miles; contractors, Wade, Clower & Wade.

Jacksonville Terminal Company—New station with plaza, cost $1,500,000, 40 per cent completed. Extension of passenger and freight yard facilities, 75 per cent completed.

Kissimmee River (S. A. L.)—Building extension of 2.25 miles in Polk county.

Tampa Southern—Building from Orient to Palmetto, 36 miles.

GEORGIA

First Track		
Georgia Railroad—Savannah River Terminal Company, not specified	0.93	
Southern Railway—Between Georgia-South Carolina state line and Cornelia	10.50*	
Washington & Lincolnton—Not specified	7.00	18.43

*Relocation work takes the place of old line.

Second Track		
Georgia Railroad—Savannah River Terminal Company, not specified	0.31	
Southern Railway—Cornelia to Georgia-South Carolina state line	23.40	23.71

Other Important Work Under Construction

Atlanta & West Point—Building between College Park and Palmetto, 18 miles, second track.

Chestatee Mines—Building from Clermont to Chestatee, 10 miles; contractors, Nichols Contracting Company, Atlanta.

Georgia Railroad—Building between Harrisonville yard and Wheless, 2.5 miles, second track.

Seaboard Air Line—Additional shop and yard facilities at Howells, cost $225,000 completed.

IDAHO

First Track		
Oregon Short Line—Collins northeasterly, 7.26 miles; Firth to Goshen, 7.44 miles; total	14.70	
Oregon-Washington Railroad & Navigation Co.—Beaver to Jefferson	8.66	23.36

Other Important Work Under Construction

Oregon Short Line—Building from Menan to Annis, 2.72 miles; Keever to Thomas, 4.63 miles, and Lincoln to Ammon, 3.59 miles; total, 10.94 miles. Replacing 750 ft. pile trestle over Snake river at Burley, with Whipple trusses and deck plate girders on concrete piers, and abutments cost $260,000, 45 per cent completed.

Oregon-Washington Railroad & Navigation Co.—Building from Pine Creek to Constitution, 9.30 miles, 2 per cent completed.

ILLINOIS

First Track		
Alton & Southern—Vandalia crossing E. St. Louis to Toledo, St. Louis & Western	4.80	
Chicago & Calumet River—Extension of main line	0.21	
Marion & Eastern—Pittsburg to Crab Orchard	2.00	
Peoria & Pekin Union—Hilliard to Groveland Mine	2.00	9.01
Second Track		
Alton & Southern—At East St. Louis	1.60	
Chicago, Burlington & Quincy—Virden to Litchfield	23.29	24.89
Third Track		
Illinois Central—Du Quoin to Bois	11.80	11.80
Fifth Track		
Illinois Central—At Chicago	1.96	1.96
Sixth Track		
Illinois Central—At Chicago	2.14	2.14

Other Important Work Under Construction

Baltimore & Ohio Chicago Terminal (B. & O.)—Track elevation of 3.29 miles double track, possible separation of grades and construction of subway Thirty-ninth to Sixty-ninth streets, Chicago, cost $1,200,000, 20 per cent completed. One 6-track subway and elevation of Forty-eighth avenue yard, 1.01 miles of elevation, including runoff at Forty-eighth avenue, Chicago, cost $200,000, 95 per cent completed. Coach and engine terminals, including construction of roundhouse, coach yard store and office buildings and additional elevated tracks between Robey street and Halsted street, Chicago, cost $3,000,000. 95 per cent completed. Calumet Sag Channel construction of 4-track bridge over canal and changing location of tracks and crossing of Grand Trunk Railway at Blue Island, 0.75 mile of new track alinement, cost $120,000, 20 per cent completed.

Chicago & Eastern Illinois—Bridge over Okaw river at Findlay, cost $275,000, completed; passenger station at Danville, cost $195,000, completed; freight terminal at Salem, cost $196,000, 20 per cent completed.

Chicago & Erie (Erie)—Float bridge and freight station at Chicago, 88 per cent completed.

Chicago & North Western—Extension and changes in California avenue coach yard, Chicago, cost $118,000, completed; grain elevator at Chicago completed. Extensions to shop buildings at Chicago shops, cost $880,000, 40 per cent completed. Construction of 9-stall addition to engine house, power house, machine shop, coal chute and 4.25 miles yard track at Nelson, cost $178,000, 80 per cent completed.

Chicago & Western Indiana—Work continued on elevating sections of roadbed to eliminate grade crossings in Chicago, about $1,200,000 has been spent on the work.

Chicago, Burlington & Quincy—Building second track from Keyesport to Shattuc, 10 miles, and bridge work, cost $128,000, 49 per cent completed; Chicago freight terminals cost $4,000,000, 5 per cent completed. Yard extension and engine terminal at Clyde, cost $755,730, 85 per cent completed. Extension of yards and terminals at Beardstown, cost $147,600, completed. Bridge work on track elevation at Aurora, cost $347,000, 68 per cent completed. River protection work on lines along Missouri river cost $144,000. 50 per cent completed.

Chicago, Rock Island & Pacific—Track elevation between Eighty-third and Ninetieth streets, Chicago, cost $1,240,000, 75 per cent completed.

Chicago Union Station Company—New Union Station to cost $50,000,000, 10 per cent completed.

Elgin, Joliet & Eastern—Reconstruction of terminal facilities at south gate of Illinois Steel Company's plant at Joliet, cost $124,854, completed.

Galesburg, Rockford & Northern—Building extension from Hooppole to Geneseo, 16 miles; contractors, Constructive Utilities Corporation, New York.

Paducah & Illinois—Ohio River bridge at Metropolis, completed.

Pennsylvania Lines, Northwest and Central Systems—Freight terminal and warehouse at Chicago, cost $4,000,000, 90 per cent completed; work under way on grade separation at Chicago.

Pittsburgh, Cincinnati, Chicago & St. Louis (Pa. L. W.)—Grade separation at Chicago, cost $4,567,000. 35 per cent completed. New engine house layout and shop facilities at Fifty-ninth street, Chicago, cost $374,000, 80 per cent completed. Grade separation Englewood Connecting Railway, cost $322,000. 10 per cent completed.

INDIANA

Second Track	Miles	Miles
Baltimore & Ohio & Chicago (B. & O.)—Lapaz Junction to Milford Junction	27.00	
Chicago & Erie (Erie)—Between Boone Grove and Griffith.	19.00	
New York, Chicago & St. Louis—Through Ft. Wayne	1.85	47.85

Other Important Work Under Construction

Chicago & Eastern Illinois—Single track bridge at Hazleton, cost $130,000, completed.

Cincinnati, Indianapolis & Western—Track elevation at Indianapolis, cost $100,000, 5 per cent completed. General office building and freight house and team tracks at Indianapolis, cost $200,000, 15 per cent completed, and branch 3.50 miles track to mine, cost $103,000, 60 per cent completed.

Cleveland, Cincinnati, Chicago & St. Louis—Grade separation through center of Indianapolis, cost $1,025,000, 25 per cent completed. Separation of grade at Tennessee street, Indianapolis (Peoria & Eastern), cost $161,000, 50 per cent completed.

Evansville & Indianapolis—Realinement work and reducing curvature between Worthington and Petersburg, 4.50 miles completed.

Indianapolis & Frankfort (Pa. R. R.)—Building from Frankfort to Ben Davis, 41 miles; contractors, Dunn-McCarthy Company, Chicago.

Indianapolis Union Railway—Grade separation on Union tracks division, and elevation of train shed, Indianapolis, cost $5,000,000, 20 per cent completed.

Pennsylvania Lines, Northwest & Central Systems—Engine yard and facilities at Fort Wayne, cost $125,000, 90 per cent completed.

Pittsburgh, Cincinnati, Chicago & St. Louis (Pa. L. W.)—Building from Philadelphia to Irvington, 9.08 miles second track; rearrangement and extension of yards and car repair facilities at Richmond, cost $530,000, 60 per cent completed. Joint freight terminal yard east of Belt Railway at Indianapolis, cost $1,726,000, 50 per cent completed. Grade separation Ray to Downey streets, Indianapolis, cost $123,000 completed. New inbound freight house and tracks on Pennsylvania street, Indianapolis, cost $1,331,000, completed. Additional tracks and grade reduction Peoria Junction to Royal Center, cost $572,000, 30 per cent completed. New freight house at Kokomo, cost $132,000, 5 per cent completed.

Toledo, St. Louis & Western—Rebuilding bridge over Wabash river at Silverwood, cost $150,000, 60 per cent completed.

IOWA

Other Important Work Under Construction

Chicago & North Western—Reinforced concrete grain elevator and 6.50 miles yard tracks at Council Bluffs, cost $1,375,000, 60 per cent completed.

Chicago, Burlington & Quincy—New shops at West Burlington, cost $485,500, completed.

KANSAS

First Track		
Anthony & Northern—Larned to north line of Pawnee county	21.50	21.50

Second Track		
Atchison, Topeka & Santa Fe—Not specified	6.62	
Union Pacific—Manhattan to Junction City	20.50	27.12

Other Important Work Under Construction

Barton County & Santa Fe (A. T. & S. F.)—Building from Holyrood to Galatia, 32 miles.

Kansas City Southern—Reconstruction of bridge over Kansas river at Kansas City, cost $250,000, completed.

Kansas City Terminal Railway—See Missouri.

Union Pacific—At Kansas City, 35-stall roundhouse, cost $238,280, 51 per cent completed; power house, 12 per cent completed, and turntable, 73 per cent completed, cost of both $122,037; at Ellis, 14-stall roundhouse, power house and cinder pit, cost $369,700, 70 per cent completed; at Marysville, roundhouse, power house, cinder pit, turntable, trackage, water tank, cost $270,550, completed.

KENTUCKY

First Track		
Chesapeake & Ohio Northern (C. & O.)—Point near Limeville to Kentucky-Ohio state line	2.12	
Long Fork (B. & O.)—Alphoretta to Weeksbury	26.00	
Louisville & Nashville—Benham to Lynch, 0.83 miles; North Hazard to Allois, 0.85 miles; total	1.68	29.80

Second Track		
Cincinnati, New Orleans & Texas Pacific—Not specified	13.20	13.20

Third Track		
Chesapeake & Ohio—Limeville to C. & O. Northern connection	1.09	1.09

Other Important Work Under Construction

Kentucky & Indiana Terminal—Engine terminal at Louisville, total cost $274,600, completed except cinder pits to be finished April, 1918.

Louisville & Nashville—Building from Allair to Burlingham and Whitesett, 8.01 miles; Kildav to Seagrave, 9.58 miles; Grays Knob to Turtle Creek, 2.22 miles; Blackey to Caudill branch, 3.28 miles; total 23.09 miles, and surveys under way from Hombre to Staceys branch, 6.2 miles; terminal facilities at De Coursey, cost $429,000, 95 per cent completed.

LOUISIANA

First Track		
Garyville Northern—Garyville to Livingston	18.00	
Iberia, St. Mary & Eastern—Shadyside to Patterson	8.80	
Leesville East & West—Mill Creek to Front	2.00	
Orange-Northeastern—At Vinton	1.00	
Ouachita & Northwestern—Clarks to Standard	10.00	39.80

Other Important Work Under Construction

Missouri Pacific—New yard tracks, engine house, back shop and other buildings and facilities at Monroe, cost $215,000, 98 per cent completed.

Oakdale & Gulf—Surveys made for extension Godwin to Mamon, 18.00 miles.

Orange Northeastern—Building from Stark to Leesville, 40 miles.

MAINE

Other Important Work Under Construction

Maine Central—Lewiston station and yard, cost $105,000, completed; grade revision and second track from Waterville tower to Clinton, cost $700,000, 80 per cent completed.

MARYLAND

First Track		
Pennsylvania Railroad—Odentown branch to Camp Meade, 1.66 miles; total	1.68	1.68

Second Track		
New York, Philadelphia & Norfolk—F. G. block station to N. side Pocomoke river, 0.27 mile; S. side Pocomoke river to A. J. block station, 0.21 mile; total	0.48	
Pennsylvania Railroad—Odentown branch to Camp Meade, 0.57 miles; total	.57	
Western Maryland—From a point about one mile west of Big Pool to Clearspring	5.65	6.70

Other Important Work Under Construction

Baltimore & Ohio—Building from Baltimore to Patapsco Creek, 5.00 miles; improvements at Baltimore, New Pier No. 6, at Locust Point, cost $1,500,000, completed; two transfer bridges at Locust Point, cost $196,200, 90 per cent completed; new transfer, bridge at President street, cost $112,200, 54 per cent completed; at Curtis Bay, new export coal pier and yard, cost $2,800,000, completed; at Cumberland, change of line at site of Kelly Springfield Tire Plant, cost $225,000, 19 per cent completed; at Annapolis Junction, additional track facilities, cost $100,000, 90 per cent completed.

Pennsylvania Railroad—Rebuilding the B. & P. tunnel of the Baltimore division of the P. B. & W., work completed on 1.68 miles of first track and 0.57 mile second track.

MASSACHUSETTS

Third Track		
Boston & Albany—Athol Jct. to Oak street	1.21	1.21

Fourth Track		
New York, New Haven & Hartford—Mansfield to East Foxboro	1.99	1.99

Other Important Work Under Construction

Boston & Maine—Additional yard facilities at Ayer, including 11 miles of new track and increasing capacity about 800 cars, cost $244,500, completed; additional yard facilities at East Deerfield, capacity of yards has been doubled and new engine house shop being built, cost $1,196,000, 95 per cent completed; new bridge over Connecticut river near East Deerfield, cost $274,000, 30 per cent completed.

New York, New Haven & Hartford—Engine facilities at Southampton street, Boston, cost $638,000, completed; engine facilities at Dover street, Boston, cost $130,000, completed; South Boston, cut for four-track approach to Boston freight terminal, cost $972,000, 25 per cent completed; rebuilding about 75 bridges on the system, cost $835,000, 25 per cent completed.

MICHIGAN

First Track		
Copper Range—Between Calumet Jct. and Mohawk	1.47	
Detroit Terminal Railroad—Station 416+74 to Station 529 +25	2.13	
East Jordan & Southern—Extensions of branches	3.00	
Rapid Railroad—Detroit to Mt. Clemens	1.23	7.83

Second Track		
Detroit Terminal Railroad—Building from Station 416+74 to Station 529+25; total	2.13	2.13

Other Important Work Under Construction

Detroit, Toledo & Ironton—Train terminal yard, 600 car capacity, cost $250,000, 75 per cent completed; West Detroit "South yards" completed.

Grand Trunk—New car shops at Port Huron, cost $250,000, 90 per cent completed; new classification yard at Gillen, cost $375,000, completed.

New York Central—Engine facilities and extension of yard at River Rouge, 75 per cent completed; new freight terminal at Detroit completed and grade separation at Detroit 75 per cent completed.

MINNESOTA

First Track		
Duluth & Northern Minnesota—Mile post 87½ to mile post 99¼	11.75	11.75

Second Track		
Chicago, Milwaukee & St. Paul—Ortonville west	0.97	
Duluth, Missabe & Northern—Wolf to Virginia Yard	5.50	
Northern Pacific—Rice's to Gregory, 14.67 miles; Duluth to Superior, Wis., 1 mile; total	15.67	22.14

Other Important Work Under Construction

Great Northern Terminal (Gr. Nor.)—Freight terminal at St. Paul, cost $400,000, 20 per cent completed.

Minneapolis & St. Louis—Terminal improvements at Minneapolis, cost $105,000, completed.

Minneapolis Belt Line (Gr. Nor.)—Hump classification yard, engine house with terminal facilities at Northtown, cost $250,000 completed.

St. Paul Union Depot Company—Work started on union station and terminal yard to cost $11,000,000.

MISSISSIPPI

First Track		
Jackson & Eastern—At Union	1.00	
Kosciusko & Southeastern—Kosciusko to Zama	16.00	
Pearl River Valley—Between Nicholson and Emery	4.80	
Yazoo & Mississippi Valley—Yerger to end of track, 0.12 miles; Stout to Galloway, 6.5* miles; total	6.62	28.42

*Relocation work takes the place of 6.73 miles of old line.

MISSISSIPPI—(*Continued*)

Second Track	Miles	Miles
Yazoo & Mississippi Valley—Cruger to Gwin	12.50	12.50

Other Important Work Under Construction

Alabama & Vicksburg—Replacing steel truss span and two steel girder spans over Big Black river with three concrete arch spans, of 135 ft. each, and changing approach, and replacing same, with concrete pile trestle approach, at cost of about $150,000.

Alabama & Vicksburg and Mobile & Ohio—Underpass concrete subway at Meridian, cost $120,000, completed.

Gulf & Ship Island—Building Hovey to Kiln, 44 miles.

Pearl River Valley—Building extension from Emery, 12.1 miles.

MISSOURI

First Track

Missouri Pacific—Old connection Bagnell branch to Jefferson City passenger station, 0.43 miles; at Neelyville to new connection Neelyville, 0.12 miles; total	0.55	
Sligo & Eastern—Sligo Furnace Company's line Neals Creek to Inman	3.00	3.55

Second Track

Chicago, Burlington & Quincy—Kansas City bridge	0.79	0.79

Other Important Work Under Construction

Chicago, Burlington & Quincy—Bridge over Missouri river at Kansas City, cost $1,124,000, 85 per cent completed.

Kansas City Terminal Railway—Double track connecting line between Kansas City, Mo., and Kansas City, Kan., 3.90 miles, includes 1.60 miles of steel viaduct and double track, double deck bridge across Kansas river, track work and fill being done by company forces and concrete and steel work by Arkansas Bridge Company, cost $4,300,000, 50 per cent completed; in addition there will be two passenger stations each to cost, with approaches, $100,000, and two freight sub-stations to cost $25,000 each—one sub-station completed and one 20 per cent completed.

Missouri Pacific—Reinforced concrete viaduct at Chouteau avenue, St. Louis, total cost borne by Missouri Pacific, St. Louis-San Francisco, United Railways, and city of St. Louis, $325,000; Missouri Pacific's proportion $170,000, work completed; new yard tracks, passenger station, umbrella shed, brick freight house and storeroom, etc., at Joplin, cost $105,000, completed; change of alinement on Belmont and Jackson branches and constructing 150-ft. truss on concrete piers over division channel near Allenville, cost $160,000, 20 per cent. completed.

St. Joseph & Grand Island—Reconstruction of Missouri river bridge at St. Joseph, including new substructure and replacing old draw span with new one of increased length, cost $1,420,000, 65 per cent completed.

St. Louis-San Francisco—New mechanical facilities, extension of yards and new water facilities at Newburg, cost $122,000 completed.

MONTANA

First Track

Chicago, Milwaukee & St. Paul—Grass Range to Winnett	23.10	
Northern Pacific—Hesper to Rapelje, 38.2 miles; Dixon to Polson, 33.1 miles; total	71.30	94.40

Second Track

Great Northern—Pacific Jct. to Havre, 4.00 miles; Shelby to Cutbank, 24.00 miles; Columbia Falls to Whitefish, 8.00 miles; total	36.00	36.00

Other Important Work Under Construction

Chicago, Milwaukee & St. Paul—Building from Blackfort Junction to Clearwater Junction, 23.00 miles.

Great Northern—Completed following work: Freight terminal at Wolf Point, cost $400,000; freight terminal at Bowdoin, cost $400,000; extension of Havre yard and enlargement of engine facilities, cost $200,000; hump classification yard at Great Falls, cost $300,000; water treating plants at 18 points on Billings line, cost $150,000; machine shop at Great Falls, cost $400,000.

Montana Eastern (Gr. Nor.)—Building between Lewistown and Grass Range, 35 miles; contractors, A. Guthrie & Co., St. Paul, Minn.

Montana Southern—Building from Divide to Elkhorn mines, 40 miles. Contractors, Willis L. Adams Co., Niagara Falls, N. Y.

Northern Pacific—Building Bozeman to Logan, 33.00 miles.

NEBRASKA

Other Important Work Under Construction

Chicago, Burlington & Quincy—Building from Chalco to Yutan, 15.26 miles, contractor Edward Peterson Company, Omaha; building second track from Ashland to Greenwood, 6.84 miles; additional terminal facilities at Omaha, cost $134,000, 80 per cent completed; hump yards at Lincoln, cost $140,000, 10 per cent completed; yards and spur, 7.5 miles at Bayard, cost $200,000, 80 per cent completed; bridge over Platte river at Phillips, cost $105,000, 40 per cent completed.

Chicago Great Western—Addition to elevator at Omaha, cost $250,000, complete.

Hastings & North Western (U. P.)—Roundhouse, turntable, cinder pit, trackage, water tank, etc., cost $230,439, completed.

Missouri Pacific—Track elevation at Dodge street and eliminating grade crossings at Dodge, Douglas and Forman streets, Omaha, cost $200,000, 30 per cent completed.

Union Pacific—Building power house at Omaha, cost $555,000, 75 per cent completed; machine shop extension at Omaha, cost $148,200, 27 per cent completed; improvements at Grand Island under way on 15-stall addition to roundhouse, cost $124,644, 66 per cent completed, power house, 51 per cent completed and well, water tank, pump house, etc., 76 per cent completed, cost of both $112,278; coaling station, cost $128,495, 61 per cent completed and passenger station, cost $133,710, 59 per cent completed; at North Platte, passenger station, cost $154,070, 69 per cent completed.

NEVADA

First Track

Nevada Northern—Between East Ely and Hiline Jct.	3.00		
Western Pacific—Between Reno Junction, Cal., and Reno	7.00*	10.00	

*Relocation work on part of N. C. O. Ry.

NEW JERSEY

First Track	Miles	Miles
Pennsylvania Railroad—Kent to Lehigh Junction, Trenton div., 1.53 miles, at Camden (elevation of tracks) West Jersey & Seaboard div., 0.17 miles; total	1.70	
Raritan River—Branch line south from Gillespie	1.00	2.70

Second Track

Pennsylvania Railroad—Bordentown to Trenton, Trenton div., 3.79 miles; at Camden (elevation of tracks) West Jersey & Seaboard div., 0.17 miles; total	3.96	3.96

Third Track

Central of New Jersey—North Branch to White House	3.31	
West Shore (N. Y. C.)—Granton to Bellmon's Creek	1.52	4.83

Fourth Track

Central of New Jersey—North Branch to White House	3.31	3.31

Other Important Work Under Construction

Central of New Jersey—New passenger terminal station and train shed at Newark, cost $500,000, 83 per cent completed; new coal shipping pier at Jersey City, cost $1,500,000, 3 per cent completed; grade crossing elimination at Westfield, cost $300,000, 12 per cent completed.

Delaware, Lackawanna & Western—Grade crossing elimination work at Delawanna and Millburn costing $156,000, completed; at Orange costing $2,300,000, 90 per cent completed.

Erie—Engine terminal at Croxton, 9.3 per cent completed. Strengthening pier and installing freight handling machinery at Weehawken, completed; renewal of bridges on Greenwood lake division completed.

New York, Susquehanna & Western (Erie)—Freight terminal at Undercliff, 93 per cent completed; engine terminal at Little Ferry, 97 per cent completed.

Philadelphia & Reading—Additional tracks New York branch, Belle Meade to Weston, costing $733,000, 20 per cent completed; at Trenton Junction, avoidance grade crossing at Asylum road, cost $101,000, 13 per cent completed; Port Reading Railroad, car dumper and coal thawing plant at Port Reading, cost $620,000, 99½ per cent completed.

NEW MEXICO

First Track

Alamogordo & Sacramento Mountain (E. P. & S. W.) Extending tails of switchback at Toboggan	0.16	0.16

Second Track

Atchison, Topeka & Santa Fe—Not specified	5.11	5.11

Other Important Work Under Construction

El Paso & Northeastern (E. P. & S. W.)—Change of line for betterment of grade and alinement on Eastern division from M. P. 118 to 135, cost $326,000, 60 per cent completed.

NEW YORK

First Track

Arcade & Attica—Arcade to Arcade Junction	2.00	
Long Island—Camp Upton Jct. to Camp Upton	1.24	
New York Dock Railway—In Brooklyn	.50	3.74

Second Track

Central New England—Maybrook to Campbell Hall	0.76	
Long Island—Oakdale to Sayville	3.05	
New York Connecting—Between Port Morris and Sunnyside Yard	4.64	8.45

Third Track

New York Central—Poughkeepsie to Hyde Park, 3.57 miles; Woodlawn to Mt. Vernon, 0.75 miles; at Dunkirk, 0.60 miles; total	4.92	
New York Connecting—Between Port Morris and Fresh Pond Jct.	7.58	12.50

Fourth Track

New York Central—Poughkeepsie to Hyde Park, 3.07 miles; Woodlawn to Mt. Vernon, 0.75 miles; at Dunkirk, 0.60 miles; total	4.42	
New York Connecting—Between Port Morris and Fresh Pond Jct.	8.04	12.46

Other Important Work Under Construction

Buffalo, Rochester & Pittsburgh—Engine terminal and yard improvements at East Salamanca, cost $650,000, 80 per cent completed.

Central New England—Strengthening bridge over Hudson river at Poughkeepsie, cost $336,840, 20 per cent completed.

Delaware, Lackawanna & Western—Grade crossing elimination work at East Buffalo (Harlem avenue) costing $190,000, 50 per cent completed; at Buffalo, Bailey avenue and Walden avenue, costing $100,000, 97 per cent completed.

Erie—Renewal of bridge over Genesee river at Rochester, completed. Grade elimination at Buffalo, completed.

Lehigh Valley—Roundhouse terminal, Tifft Farm, Buffalo, 75 per cent completed. Roundhouse terminal, East Buffalo, 75 per cent completed; rebuilding bridges, Buffalo division between Manchester and Buffalo and on Ithaca and Niagara Falls branches, 75 per cent completed.

New York Central—Yard tracks and engine facilities at Gardenville, 48 per cent completed; engine facilities at Belle Isle, 60 per cent completed; express building, power house and express tracks at Curtis street, Buffalo, 45 per cent completed; change of line, barge canal crossing, bridges, etc., between Tonawanda and North Tonawanda, 3.2 per cent completed.

New York, Pennsylvania & Ohio (Erie)—Grade crossing elimination at Jamestown, 44 per cent completed.

Pennsylvania Railroad—New freight house facilities and yard at Buffalo, work under way.

Staten Island Rapid Transit Railroad (B. & O.)—Construction of coal machine, thawing shed and enlargement of Arlington yard at Arlington, Staten Island, cost $2,000,000, all completed except yard track work.

NORTH CAROLINA

First Track

	Miles	Miles
Appalachian Railway—Cherokee to Oceana Lufty	3.50	
Carolina & Northeastern—Jackson to Rehoboth	4.00	
Goldsboro Union Station Co.—At Goldsboro	1.35	
Madison County-Laurel River Logging Company line	5.00	
Southern Railway—At Catawba river near Belmont	3.00*	16.85

*Relocation work takes the place of old line.

Second Track

Seaboard Air Line—Through city of Raleigh	1.50	
Southern Railway—At Catawba river near Belmont	3.00	4.50

Other Important Work Under Construction

Appalachian Railway—Surveys under way for extension Oceana Lufty to Swayney, 7.00 miles.

Carolina & Northeastern—Building extensions, Rehoboth to Lasker, 4.00 miles, and Lasker to Ahoskie, 33 miles.

Seaboard Air Line—Grade revision between Hamlet, N. C., and Charleston, S. C., cost $350,000, completed; grade revision on portion of line between Sanford, N. C., and Hamlet, cost $225,000, completed; additional shop and yard facilities at Hamlet, cost $125,000, completed; double track, yard extension and shop extension work at Raleigh, cost $225,000, completed.

Southern Railway—Rebuilding bridges on Salisbury-Morristown line.

Statesville Air Line—Building from Statesville to Yadkinville, 29 miles.

OHIO

First Track

Chesapeake & Ohio Northern (C. & O.)—Kentucky-Ohio state line to Waverly	27.19	27.19

Second Track

Baltimore & Ohio & Chicago (B. & O.)—Through Defiance	1.30	
Cleveland, Cincinnati, Chicago & St. Louis—Between Harper and Gretna	4.50	
New York, Chicago & St. Louis—Through Cleveland	1.18	
Pennsylvania Lines, Northwest and Central Systems—At Delaware, 8.10 miles; at Sandusky, 3.10 miles; total	11.20	18.18

Other Important Work Under Construction

Baltimore & Ohio & Chicago (B. & O.)—Second track through Defiance, elimination of grade crossings and improved freight and passenger facilities, cost $675,000, 95 per cent completed.

Baltimore & Ohio Southwestern (B. & O.)—Additional yard tracks at Brighton, cost $103,000, completed.

Bessemer & Lake Erie—Enlargement of yard and facilities, etc., Conneaut Harbor, 95 per cent completed.

Chicago & Erie (Erie)—Improved engine terminal facilities at Marion, 97 per cent completed.

Cleveland & Mahoning Valley (Erie)—Separation of grades at Youngstown, 40 per cent completed.

Cleveland, Cincinnati, Chicago & St. Louis—Building second track between Harper and Gretna, 4.5 miles; grading and masonry work for elevation of tracks in Columbus, cost $642,700, completed; new freight house, etc., at Middletown, cost $103,500, 50 per cent completed; rebuilding bridge No. 6 over Cuyahoga river at Cleveland, cost $160,000, 30 per cent completed.

Dayton Union Railway—Reconstruction of Miami river bridge at Dayton, cost $300,500, completed.

Hocking Valley—Grading under way for second track on about 27 miles out of 87 miles between Delaware and Le Mogue; subway to carry 7 tracks over Parsons avenue, at South Columbus, cost $240,000, 20 per cent completed.

Lake Erie & Eastern—Extension to Gerard, 1.20 miles, including yard facilities, cost $1,125,000, 25 per cent completed.

New York Central—Classification yard and repair yard at Coalburg, 65 per cent completed; Himrod avenue viaduct and separation of grades at Youngstown, 20 per cent completed; additional tracks in yard at Collinwood, 75 per cent completed; subway at Cleveland 60 per cent completed; new yard facilities at Rockport, 75 per cent completed; subways, new station and track elevation through Elyria, 20 per cent completed, and Camp street subway at Sandusky, 60 per cent completed.

New York, Chicago & St. Louis—Two high level freight stations at East Ninth street and Hill street, Cleveland, cost $128,000, completed.

New York, Pennsylvania & Ohio (Erie)—Enlarging yard at Kenmore and switch track to South Akron, 94 per cent completed; freight station and increased freight handling facilities at Akron, 70 per cent completed; improved yard facilities at Kent, 96 per cent completed.

Pennsylvania Lines, Northwest and Central Systems—Yard at Stark, cost $793,000, 25 per cent completed; coaling station at Yankee Crossing, cost $236,500, 10 per cent completed; yard at Austenburg, cost $108,000, 57 per cent completed; dock No. 6 new coaling apparatus at Ashtabula, cost $205,000, completed; Union avenue viaduct at Cleveland, cost $107,000, 80 per cent completed; Kinsman street yards at Cleveland, cost $300,000, 10 per cent completed; coal handling facilities at Sandusky, cost $629,000, completed; Bay Junction yards at Sandusky, cost $266,000, 95 per cent completed; yard tracks at Columbus, cost $116,500, completed; engine house and coaling station at South Akron, cost $350,000, 75 per cent completed; building Summitville to Kinsington, 7.7 miles second track; Warren to Bristolville, 11.8 miles second track; Leetonia to Alliance Junction, 13 miles third track; Alliance Junction to Alliance, 3 miles fourth track; Alliance to Stark, 12 miles third and fourth track; Canton to M. N. Tower, 6 miles third and fourth track.

Pittsburgh & Lake Erie—Remodeling Haselton terminal yard, cost $1,250,000, 35 per cent completed. Struthers yard extension, cost $775,000, 75 per cent completed.

Pittsburgh, Cincinnati, Chicago & St. Louis (Pa. L. W.)—New freight house and team track facilities at Newark, cost $117,000, 10 per cent completed; improvements at power plant at shops, Columbus, cost $133,000, completed; additions to shops, Columbus, cost $956,000, 10 per cent completed; separation of grades at Cincinnati, cost $519,000, completed; additional yard facilities at Bradford, cost $351,500, 80 per cent completed; grade separation at Cincinnati, total cost $140,000, of which railway pays $91,000 and city $49,000, 5 per cent completed.

Toledo & Ohio Central—Erecting shop at Bucyrus costing $165,000, completed.

Toledo & Cincinnati (B. & O.)—Building from East Dayton to North Dayton, 2.00 miles.

OKLAHOMA

First Track

	Miles	Miles
Miami Mineral Belt—Quapaw to Kansas state line	12.00	
Oklahoma, New Mexico & Pacific—Ringling Jct. to Healdton	5.80	
Texas, Oklahoma & Eastern—Not specified	6.00	23.80

Second Track

St. Louis-San Francisco—Between Tulsa stock yards and Sapulpa	17.20	
Sand Springs—Not specified	1.00	18.20

Other Important Work Under Construction

Chicago, Rock Island & Pacific—Bridge over Arkansas river at Jefferson, cost $125,000, 95 per cent completed.

Miami Mineral Belt—Building from Kansas state line to Baxter Springs, 3 miles, contractors Allhands-Hedges Construction Company (grading), Jarrett Construction Company (bridge and building), both of Springfield, Mo.

Oklahoma, New Mexico & Pacific—Building extension from Healdton north, 11 miles.

Osage County & Santa Fe (A. T. & S. F.)—Building from Owen to Fairfax, 62 miles.

St. Louis-San Francisco—New mechanical facilities and yards at Oklahoma City, cost $228,000, completed; new mechanical facilities and yard at West Tulsa, cost $410,000, completed: strengthening bridges between Moneth, Mo., and Sapulpa, Okla., cost $260,000, 50 per cent completed.

Texas, Oklahoma & Eastern—Building from Broken Bow, Okla., to De Queen, Ark., 25 miles; grade completed for 5 miles of second track, and 12 miles under construction.

OREGON

First Track

Columbia & Nehalem River—Not specified	7.00	
Klamath Falls Municipal—Klamath Falls to Olene	10.00	17.00

Other Important Work Under Construction

Columbia & Nehalem River—Building from end of present line into timberland, 6 miles.

Oregon-Washington Railroad & Navigation Co.—Second track work is to be carried out between Hanton and Kamela, 2.50 miles; separation of grade at Portland, cost $469,000, 47 completed; fill 4,200 ft. trestle at Albina, cost $100,000, completed.

Klamath Falls Municipal—Building from Olene to Dairy, 10 miles.

PENNSYLVANIA

First Track

Cambria & Indiana—Regan Junction to Revloc	14.00	
Chartiers Southern—Station 96 + 69 to Station 130	0.62	
Johnstown & Stony Creek—Not specified	1.00	
Leetonia Railway—Branch line	3.00	
Lehigh & New England—Gemmel to Lizard Creek Junction	0.85	
Lehigh Valley—Bear Creek branch, main line to Bear Creek, 9.17* miles; at end of Jeddo No. 4 Colly branch, 0.12 miles; total	9.29	
McKeesport Connecting—At Riverton	0.50	
Montour Railroad—Mifflin Junction to McIvor	2.42	
Morgantown & Wheeling—Pennsylvania-West Virginia state line to Blacksville	1.00	
Pennsylvania Railroad—Fairchance to terminus, 1.03 miles; Bolivar to terminus, 0.97 mile; Parnassas to terminus, 1.50 miles; West Morrisville yard, N. Y. div., 1.33 miles; Chestnut Hill branch, Chelten avenue 0.30 mile, Highland to Seminole avenues 0.54 mile; South Philadelphia improvements, Delaware avenue, 0.28 mile; Coatesville branch, Pomeroy yard, 1.27 miles; Chester & Philadelphia branch, Ft. Mifflin to Darby Creek, Essington, 6.24 miles; Darby Creek to Chester, 0.92 mile; connection with main line (P. B. & W.), Eddystone, 0.34 mile; South Chester branch, Stoney Creek to Townsend street, 1.03 miles; total	15.75	
Philadelphia & Reading—At Minersville, Wolf Creek branch	0.10	
Pittsburgh & Shawmut—At Freeport	0.10	
Pittsburgh, Allegheny & McKee's Rocks—Not specified	1.04	
Sharon Railroad (Erie)—At Ferrona	0.95†	
Tionesta Valley—On Farnsworth branch, 3.28 miles; on Watson branch, 3.34 miles; on Big Run branch, 4.65 miles; total	11.27	61.89

*Relocation work takes the place of 5.33 miles of old line.
†Relocation work takes the place of main tracks through old yard.

Second Track

Bessemer & Lake Erie—K. O. Junction to Henlein	5.00	
Buffalo, Rochester & Pittsburgh—Marion Center to Home	3.55	
Cumberland Valley—Harrisburg to Le Moyne	1.06	
Lehigh & New England—Seek to Tamaqua	2.10	
Lehigh Valley—Ebervale to Jeddo No. 4	0.25	
New York, Chicago & St. Louis—Springfield to Thornton Junction	1.91	
Pennsylvania Railroad—Chestnut Hill branch, Chelten avenue, 0.11 mile, and Highlands to Seminole avenues, 0.54 mile; South Philadelphia improvements, Delaware, 0.28 mile; Chester & Philadelphia branch, Ft. Mifflin to Darby Creek, Essington, 4.58 miles; South Chester branch, Stoney Creek to Townsend street, 0.82 mile; Stoney Creek to Marcus Hook, 0.47 mile; total	6.80	
Sharon Railroad (Erie)—At Ferrona	0.95	21.62

Third Track

Philadelphia & Reading—Harrisburg to Paxtang, 1.9 miles; Palmyra to Swatara, 0.8 mile; total	2.70	2.70

Fifth Track

Pennsylvania Railroad—Eddington to Cornwells, 1.34 miles; connecting railway Philadelphia, Montgomery avenue to Diamond street, 0.43 mile; total	1.77	1.77

PENNSYLVANIA—(*Continued*)

Other Important Work Under Construction

Baltimore & Ohio—Five additional stories on freight house at Allegheny, cost $228,000, 98½ per cent completed; outbound freight house and tracks at Thirty-third street, Pittsburgh, cost $425,000, 24 per cent completed.

Bessemer & Lake Erie—Revision of line and grade on 8 miles of the Pardoe-Coolspring line, 10 per cent completed; new double track bridge to replace single track bridge over Allegheny river, 70 per cent completed; new yard at K. O. Junction, 90 per cent completed; Deer Creek branch line to new mines of Inland Steel Company, 35 per cent completed; revision of line and grade on 2.50 miles of Rural Ridge-Red Haven line, 15 per cent completed; revision of line and grade on Carter-Enterprise line, 35 per cent completed.

Buffalo, Rochester & Pittsburgh—New engine terminal at Elk Run Junction, cost $500,000, 30 per cent completed.

Chartiers Southern—Building from Clarksville to Jefferson, 7.58 miles; extension from Eighty-Four to Marianna, 10.22 miles, work indefinitely postponed, contractors A. L. Anderson Brothers Company, Inc., Altoona, Pa.

Erie—Renewal of bridge over Susquehanna river, 86 per cent completed.

Lake Erie, Franklin & Clarion—Building from Reidsburg to Odell, 3 miles, contractors, Rizzuti & Chiodo, Bradford, Pa.

Lehigh & New England—Building from Bethlehem to Allentown, 4.83 miles, contractors F. H. Clement & Co., Philadelphia, Pa.

Midland-Pennsylvania—Building between Millersburg and Ashland, 27 miles, contractor, Walter S. Aldrich, Audubon, N. J.

Morgantown & Wheeling—Building extension Blacksville to Brae, 4 miles, contractor B. M. Chaplin & Co.

New York Central—Freight storage yard at Wesleyville, 90 per cent completed; grade separation at Erie and new passenger station, 5 per cent completed; classification yard at Dock Junction, 30 per cent completed.

Pennsylvania Railroad—Elevation of existing lines on the Delaware terminal division work completed on 1.19 miles of first track and 0.31 mile of second track; new inbound and outbound freight houses and track facilities at Harrisburg, 60 per cent completed.

Pennsylvania Lines (Northwest and Central Systems)—Building from W. Rochester to Kenwood, 3 miles, contractors W. F. Trimble & Sons, Pittsburgh; raising bridge at Pittsburgh, cost $863,000, 30 per cent completed; new yard and additional tracks at Moravia, cost $394,000, 40 per cent completed; reconstructing bridge over Beaver river at Rochester, cost $653,000, 20 per cent completed.

Pennsylvania Lines—Placed grain elevator in service at Erie, Pa.

Philadelphia & Reading—Concrete arch bridge over Schuylkill river and park drives at Belmont, cost $805,000, 6½ per cent completed; change of alinement, Philadelphia and Chester branch, cost $200,000, 99 per cent completed; grading for additional tracks between Abrams and Norristown Jct. and interlocking at Norristown, cost $116,000, 75 per cent completed; opening Tulip and Emery streets, Philadelphia, coaling station, etc., Erie avenue yard, cost $264,000, 20 per cent completed; bridges at Erie avenue and Luzerne street, cost $180,000, 45 per cent completed; bridges, abutments, etc., bridge at Tulip street, superstructure and waterproofing, cost $343,000; new engine house, turntable, etc., at Reading, cost $225,000, 19 per cent completed; grading and masonry for engine facilities and yards near S. Bethlehem, cost $172,000, 25 per cent completed.

Pittsburgh & Lake Erie—Rebuilding shops at McKees Rocks, cost $222,000, 90 per cent completed; renewing 3 spans, Mendle Island bridge, cost $109,300, 10 per cent completed; renewing Beaver river bridge, cost $108,300, completed; Woodlawn yard extension, cost $200,000, 25 per cent completed; Carbon yard extension, cost $150,000, 30 per cent completed.

Pittsburgh, McKeesport & Youghiogheny (P. & L. E.)—Yard at Lynch, cost $500,000, 90 per cent completed; yard at Dickerson Run, cost $600,000, 95 per cent completed.

Tionesta Valley—Building on Big Run branch, 1.07 miles, contractor Fred C. Chido, Sheffield, Pa.

Union Railroad—The Monongahela Southern is building from Bull Run to Clairton, 5 miles, contractors James A. Hart Company, New York, and T. A. Gillespie Company, Pittsburgh, Pa.

Western Maryland—Connecting track 1.45 miles long, completed and grading completed for hold yard consisting of seven tracks for 340 cars, and three engine tracks, cost of both improvements $190,000.

RHODE ISLAND

Other Important Work Under Construction

New York, New Haven & Hartford—Engine facilities at Providence, cost $296,000, completed.

SOUTH CAROLINA

First Track	Miles	Miles
Southern Railway—South of Greenville, 4.50 miles; between Central and South Carolina-Georgia state line, 17 miles; total	21.50*	21.50

*Relocation work takes the place of old line.

Second Track		
Atlantic Coast Line—Florence to Java	6.30	
Southern Railway—Georgia-South Carolina state line to Duncan	76.60	82.90

Other Important Work Under Construction

Southern Railway—Building second track from Mt. Zion, S. C., to Charlotte, S. C., 68 miles; work started in April, 1917.

SOUTH DAKOTA

First Track		
Watertown & Sioux Falls (Gr. Nor.)—From I. C. Ry. connection to G. N. Ry. Jct. at Sioux Falls	0.19	0.19

TENNESSEE

First Track		
Knoxville, Sevierville & Eastern—Sevierville to McCookville	9.00	
Nashville, Chattanooga & St. Louis—Between Coalmont and Mill Creek	12.06	
Oneida & Western—Between Christian and East Jamestown	4.00	
Tennessee Railway—Not specified	2.75	27.81
Second Track		
Cincinnati, New Orleans & Texas Pacific—Not specified	0.70	0.70

Other Important Work Under Construction

Chicago, Rock Island & Pacific—Subway on Pennsylvania street, Memphis, cost $125,000, completed.

Louisville & Nashville—Terminal facilities at Radnor, cost $999,500, 60 per cent completed.

Nashville, Chattanooga & St. Louis—Building between Coalmont and Mill Creek, 3.75 miles.

Tennessee Railway—Building from Indian Fork south, 3.4 miles, contractors Chris & Wilson, Knoxville.

Gulf, Mobile & Northern—Building from Middleton to Jackson, 40.5 miles; on Blodgett branch, 32.5 miles; contractors, M. A. Wogan,; Burt, Bond & Murray; Powell, Powell & Fountain and Will Owen & Co., all of Jackson, Tenn.

TEXAS

First Track	Miles	Miles
Fort Worth Belt—Not specified	1.00	
Gulf & Northern—Newton to Wiergate	14.50	
Midland & Northwestern—Midland to Flory	48.00	63.50
Second Track		
Galveston, Harrisburg & San Antonio (So. Pac.)—Houston Terminals	9.46	
Galveston, Houston & Henderson—In City of Houston	0.69	
Houston & Texas Central (So. Pac.)—Houston terminals	2.93	
Kansas City, Mexico & Orient of Texas—Not specified	.50	
Southern Pacific—Chaney Junction to West Junction, 12.33 miles; Passenger station to I. & G. N. crossing, 3.17 miles; total	15.50	
Sunset Central Lines (So. Pac.)—Houston Terminals	12.33	41.35

Other Important Work Under Construction

Aransas Harbor Terminal Railway—Filling and relaying about five miles main line, 4,750 ft. new bridges, new depot water stations, etc., cost $110,000, completed.

Midland & Northwestern—Grading completed for extension from Flory to Seminole, 17 miles.

North Texas & Santa Fe (A. T. & S. F.)—Building from Shattuck, Okla., to Spearman, Texas, 85 miles.

South Plains & Santa Fe (A. T. & S. F.)—Building from Lubbock to Seagraves, 64 miles.

UTAH

First Track		
Deep Creek Railroad—Wendover to Gold Hill	44.70	
Western Pacific—Burmester to Toole, 15.50 miles; Ellerbeck to Flux and Dolomite, 7 miles; total	22.50	67.20
Second Track		
Union Pacific—Wahsatch to Emory	15.82	15.82

Other Important Work Under Construction

Los Angeles & Salt Lake—Joint coal terminal yard at Provo, including roundhouse, machine shop and other structures, cost $250,000, 90 per cent completed.

Oregon Short Line—Building from Garland to Bear River City, 9.66 miles, and from Bakers northerly 3.84 miles, total 13.50 miles; rearranging Ogden yard trackage, cost $100,000, 50 per cent completed.

VIRGINIA

First Track		
Interstate Railroad—Exeter Junction to Exeter	1.25	
Mineral Belt—Sulphur Mine to Valzinco Mine	10.00	
Norfolk & Western—Lewis Creek branch	8.48	19.73
Second Track		
Chesapeake & Ohio—Walkerford to Riverville	3.15	
Norfolk & Western—Not specified	10.70	
Southern Railway—Arrowhead to Elma	19.50	33.35

Other Important Work Under Construction

Chesapeake & Ohio—Building second track from Bremo to Strathmore, 3.3 miles.

Norfolk & Portsmouth Belt—Building with company forces from Bousch Creek to Elizabeth River, 3 miles.

Norfolk & Western—Work carried out included enlargement of yard at Shenandoah, cost $150,000; two steamer warehouses Lamberts Point, cost $1,800,000; freight station and facilities at Roanoke, cost $380,000; reconstruction of bridges on N. & W. lines, cost $327,600.

Richmond, Fredericksburg & Potomac—Atlantic Coast Line—Jointly building bridge over James river at Richmond, cost $500,000, 25 per cent completed.

Southern Railway—Building test laboratory for use of all departments at Alexandria.

Virginian Railway—Improvements to Sewalls Point coal pier, cost $675,000, 40 per cent completed.

WASHINGTON

First Track		
Cowlitz, Chehalis & Cascade—Extension from Locomas	0.50	
Northern Pacific—Weikel to Tieton	6.80	
Seattle, Port Angeles & Western (C. M. & St. P.)—Majestic to Twin	6.38	13.68

Other Important Work Under Construction

Oregon-Washington Railroad & Navigation Co.—Building from Primo to Vesta, 3.20 miles, cost $112,000, 10 per cent completed; construction of wharf and warehouse at Seattle, cost $332,000, completed; fill 800 ft. trestle at Alto, cost $143,000, 80 per cent completed.

Puget Sound & Cascade—Building from Talc to Day Creek, 8 miles, with company forces.

Seattle, Port Angeles & Western (C. M. & St. P.)—Building from Twin to Deep Creek, 3.70 miles.

WEST VIRGINIA

First Track		
Chesapeake & Ohio—Ivaton to end of line	1.73	
Morgantown & Wheeling—Price station to Pa.-W. Va. state line	7.00	
Norfolk & Western—Superior branch extension	1.59	
Pond Ford (C. & O.)—Madison to end of line	11.30	
Virginian Railway—Besoco to Prince Wick, 2.7 miles; Pemberton to Sullivan, 2.8 miles; total	5.50	
Western Maryland—Fairmont Bingamon branch, Hutchinson to Wyatt	8.42	35.54
Second Track		
Chesapeake & Ohio—Barboursville to Clover Valley	4.50	
Norfolk & Western—Not specified	2.22	6.72

Other Important Work Under Construction

Baltimore & Ohio—Building from Flemington to Astor, 3.20 miles, Hampton to Adrian, 2.50 miles, total 5.70 miles; additional freight house and yard facilities at Parkersburg, cost $265,000, completed.

WEST VIRGINIA—(*Continued*)

Chesapeake & Ohio—Building from mouth Huffs Creek up Huffs Creek, 2.7 miles, and Mon to mouth of Gilbert Creek, 13.6 miles, contractors Ballard, Herring & Severs, Yancy Mills, Va.; Seth to Whitesville, 3.6 miles; Whitesville up Big Elk Creek, 3.5 miles, contractors Boxley Brothers Company, Orange, Va.; mouth of Little Marsh Fork to mouth Hazy Creek, 6.5 miles, contractors Bowman Lumber Company, St. Albans, W. Va.; from present end of line up Beech Creek, 2.0 miles, contractors Board & Duffield, Charleston, W. Va.; building second track from West Hamlin to Salt Rock, 3.0 miles, and from Peck's Mill to Peach Creek, 4.7 miles.

Gauley & Eastern (K. & M.)—Building from Gauley Bridge to Belva, 5.50 miles, with company forces.

Pittsburgh, Cincinnati, Chicago & St. Louis (Pa. L. W.)—Building from Chester, W. Va., to ¼ mile west of Raccoon Creek, Pa., 12.16 miles, contractors Ferguson & Edmondson Company, Pittsburgh, Pa., and MacArthur Brothers Company, New York; building from Wheeling Junction to East Steubenville, 1.95 miles second track, and from Wheeling to Glenns Run, 5.19 miles, second track.

Virginian Railway—Building from Fireco to Leckie Coal Company, mine track, 1.34 miles; Fireco to Piney Fire Creek Company, tipple, 2.4 miles; Robson to Loup Creek Colliery Company, mine track, 2.5 miles; Elmore to Pocahontas Fuel Company, tipple, 2.4 miles; building from Parks Gap 5 miles of second track.

WISCONSIN

First Track

	Miles	Miles
Ettrick & Northern—Blair to Ettrick	10.00	
Wisconsin & Northern—South of Shawano to Black Creek, 19.50 miles; from Hollister northeast, 0.49 mile; total	19.99	29.99

Second Track

Northern Pacific—See Minnesota.

Third Track

Chicago, Milwaukee & St. Paul—In Milwaukee	1.20	1.20

Fourth Track

Chicago, Milwaukee & St. Paul—In Milwaukee	1.24	1.24

Other Important Work Under Construction

Ashland, Odanah & Marengo—Building from Vaughn Creek to Spring Creek, 6 miles, contractors Peppard & Fulton, Minneapolis, Minn.

Chicago & North Western—Construction of 35-stall engine house and other buildings and improvements, including 15,000 ft. of trackage, at Milwaukee, cost $350,000, 9 per cent completed.

Chicago, Burlington & Quincy—Bridge work and second track at Lytle-bluff siding, cost $370,000, 75 per cent completed.

Great Northern—Machine shop at Superior, cost $425,000, completed. Replacement of ore dock at Allouez, cost $650,000, 10 per cent completed.

Minneapolis, St. Paul & Sault Ste. Marie—Revision of line at Chippewa and grade of about five miles and construction of bridge, cost $365,000, 65 per cent completed.

WYOMING

First Track

Union Pacific—From Reliance branch to Coal mines	7.81	7.81

Second Track

Union Pacific—Pine Bluffs to Archer, 33.35 miles; Buford to Hermosa, 9.86 miles; Wamsutter to Point of Rocks, 51.90 miles; total	95.11	95.11

Other Important Work Under Construction

Union Pacific—Building second track from Hermosa tunnel to Hermosa, 1.25 miles; at Rock River snow shed construction, cost $815,680, 85 per cent completed; at Evanston machine shop, cost $182,123 completed.

CANADA

First Track

	Miles	Miles
Alberta & Great Waterways (E. D. & B. C.)—In Alberta from mile 202.1 to mile 275.4	73.30	
Canadian Northern—In Ontario, Duncan to Leaside, 1.50 miles. In Quebec, Montreal tunnel line, 3 miles; extension from Roberval, 18 miles; in Saskatchewan, Elrose to Glidden, 16.28 miles; in Alberta, Oliver to Radway Centre, 44.51 miles; in British Columbia, Victoria, towards Alberni, 9 miles; total	92.29	
Canadian Pacific—Vantage, Sask., to Congress	7.00	
Grand Trunk Pacific Branch Lines—St. Louis, Sask., to Prince Albert	24.86	
St. John & Quebec (Can. Gov't)—Gagetown, N. B., to Queenstown	8.50	
Vancouver, Victoria & Eastern (Gr. Nor.)—At Vancouver, B. C.	1.00	206.95

Other Important Work Under Construction

Alberta & Great Waterways (E. D. & B. C.)—Building extension of Egg Lake branch from mile 11 to mile 41, 30 miles, contractors J. D. McArthur Company, Winnipeg, Man.

Canadian Northern—Terminal station freight sheds and yards at Vancouver, B. C.

Canadian Pacific—Extension to Pier D, Vancouver, B. C., cost $623,700, completed.

Central Canada (E. D. & B. C.)—Building from mile 49, Peace River to mile 63, 14 miles, contractor J. D. McArthur Company, Ltd., Winnipeg, Man.

Hudson Bay Railway—Building from mile 332 to Port Nelson, Man., 92 miles, contractors J. D. McArthur, Winnipeg, Man.

St. John & Quebec (Can. Gov't)—Building between Queenstown, N. B., and Westfield, 37.8 miles; contractors, Nova Scotia Construction Company, Ltd., Halifax, N. S.

Temiskaming & Northern Ontario—Revision of main line from mile 63 to mile 66.5, 3.5 miles, contractors Port Arthur Construction Co., Toronto, Ont.

Toronto, Hamilton & Buffalo—Sorting yard at Bridgeburg, Ont., cost $500,000, 40 per cent completed.

Toronto Terminal Railway—Station at Toronto. Out through tracks, headhouse, postoffice and office building at side, cost $4,500,000, 55 per cent completed.

Vancouver, Victoria & Eastern (Gr. Nor.)—Passenger station and facilities at Vancouver, B. C., cost $500,000 completed.

Canadian War Records Photo

Canadian Railway Men Bending a Rail in France

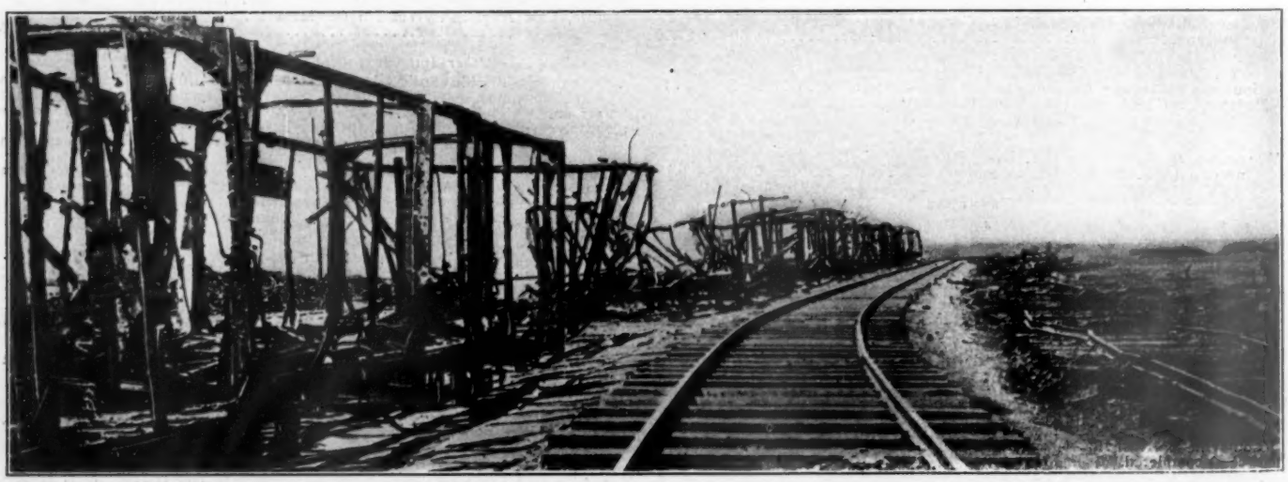
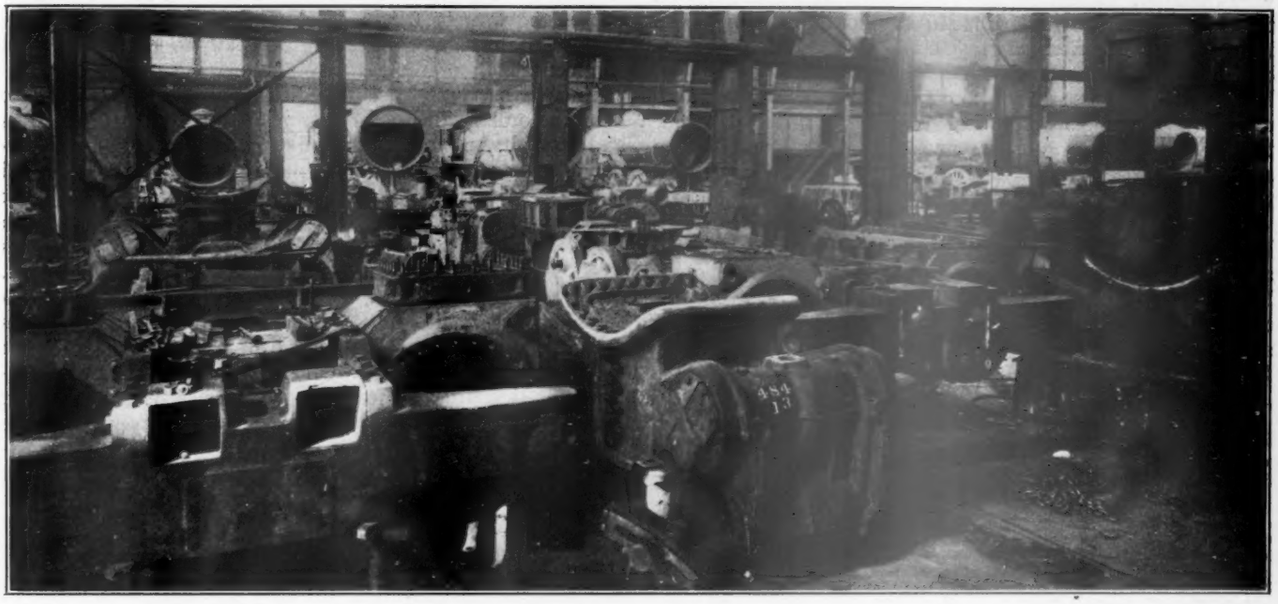


Photo from International Film Service

A German Munition Train After It Had Been Bombed by British Airmen. Photograph Found on a German Prisoner



1917 a Record Breaker in Locomotive Orders

Orders Totaled 7,642 As Compared With 5,893 in 1916. Bright Prospects for Coming Year

THE NUMBER OF LOCOMOTIVES ordered in 1917 was the largest for the last 17 years, no less than 7,642 locomotives, of all sorts and kinds, large and small, for domestic or foreign use, having been placed on the books between January 1 and December 31. The output of locomotives, as distinguished from orders placed, during the same period, namely, 5,446, was not similarly a record breaker, but it represented a production that has been exceeded but three times since 1899—in 1905, in 1906 and in 1907.

It will be observed from Table I, giving the orders for locomotives in 1917 in detail, that they were divided as follows: Domestic, 2,704; for the United States government for service in France, 2,057, and for foreign countries, 2,881.

The domestic figures are not at all extraordinary, for, as will be seen from Table II, they are considerably below the average for the past 16 years. There was, it will be remembered, a tremendous buying movement in the first few months of 1917, continuing over from the latter months of the year preceding. For a time it seemed as if this buying movement, if continued, would make 1917 one of the biggest years as to domestic orders, but our going into the world war, the difficulty of getting material and the priority given to orders for our own government and for our allies put a damper on the market for domestic purchases.

The new development in the year just past is the government orders, no less than 2,057 locomotives having been ordered by the department of which Samuel M. Felton, director-general of the American railroads in France, is the head. This total, as will be noticed from the detailed figures in the list of orders on the following pages, included 980 60 to 63-ton locomotives, a sizable order in itself, the remainder being gasoline and steam locomotives, mostly narrow gage, ranging in weight from 4 to 30 tons. It takes a good many of these four-ton engines to equal an ordinary steam locomotive, but it is worthy of note that 20 of the gasoline locomotives will be of 23 tons' weight. Presumably they will attract more than passing curiosity when they are put on the rails to haul munitions and supplies behind the lines in France.

The foreign orders for locomotives, totaling 2,881, are not as great numerically as last year, but in last year's totals there were included 370 seven-ton gasoline locomotives for the Russian government which brought down the tonnage considerably. There is a very uncertain feature in connection with these 1917 foreign orders, and that is the order for 1,500 Decapod locomotives placed for the Russian government in October. Some doubt might arise as to whether these should be included in the 1917 totals at all. The orders were distributed, 750 to the American Locomotive Company and 750 to the Baldwin Locomotive Works. No orders

TABLE I—THE LOCOMOTIVE ORDERS IN 1917

Domestic—Including railroads and industrials in the United States and Canada:		
From builders	2,056	
From company shops	648	
Total domestic		2,704
United States Government:		
For service overseas		2,057
England	275	
France	140	
Russia	2,196*	
Other foreign	270	
Total foreign		2,881*
Total of all orders		7,642*

*Including the Russian orders for 1,500 locomotives now held in abeyance.

TABLE II—DOMESTIC ORDERS FOR LOCOMOTIVES SINCE 1901

Year	Locomotives	Year	Locomotives
1901	4,340	1910	3,787
1902	4,665	1911	2,850
1903	3,283	1912	4,515
1904	2,538	1913	3,467
1905	6,265	1914	1,265
1906	5,642	1915	1,612
1907	3,482	1916	2,910
1908	1,182	1917	2,704
1909	3,350		

were definitely signed, but the locomotives were scheduled on the shop programs ahead of many large orders for American railroads, some placed as far back as May or March. The orders even now have not been canceled; they have, however, been held in abeyance. They still remain on the shop schedules, although they will undoubtedly be set back from time to time. In other words, they have still to be reckoned with as orders, and for that reason they are here put with the 1917 figures.

These Russian orders, as a whole, have proved at once a blessing and a curse for the American railway supply field and through it for the railways. The first Russian order for locomotives placed in June, 1915, when orders were scarcer than they had been at any time for the preceding six or seven years, was received with something closely akin to joyfulness, and so were the others immediately following. The last two orders, that for 500 placed last July and that for 1,500 mentioned in the preceding paragraph, have simply had to be looked upon as an unwelcome duty, as something that America as one of the opponents of Kaiserism has been properly called upon to do for one of its brother opponents. But it is still true that these Russian orders were given priority over engines urgently needed for transportation requirements at home and with all the English, French, Russian and American government engines which were placed, the American orders were pretty well down on the builders' lists.

TABLE III—CLASSIFICATION OF DOMESTIC LOCOMOTIVES ORDERED 1911-1917

	1917	1916	1915	1914	1913	1912	1911
Mikado	834	754	562	333	796	1,309	590
Switching—							
Eight-wheel	110						
Six-wheel	282	730	221	201	638	821	443
Four-wheel	47						
Consolidation	60	63	194	166	823	858	577
Mallet	175	218	120	59	72	168	112
Pacific	342	278	102	174	566	594	486
Santa Fe	370	325	75	63	...	...	...
Ten-wheel	28	40	39	48	255	364	238
Mogul	13	28	12	24	42	61	127
Mountain or Mohawk	55	182	9	12	24	...	2
Atlantic	...	2	1	34	46	5	9
American	...	1	1	19	8	8	27
Electric	43	32	69	59	94	75	133
Other	188	238	168	73	103	252	406
Total	2,704	2,891	1,573	1,265	3,467	4,515	2,850

Editorial comment on another page treats of this situation, and notice is taken that the locomotive situation is now seeing the light. The Russian order for 500 locomotives placed in July, 1917, is now almost completed, some of the locomotives having been shipped and others which were prepared for shipment are being stored until the time comes when use can be made of them by better folks than the Kaiser or the Bolsheviki. It is even announced that 200 of the locomotives will be remodeled and put in temporary service in our own country. With the other 1,500 locomotives being held in abeyance the whole situation is that the American railroads can now look forward to receiving in the near future the power they put on order six months or a year ago, and specialty manufacturers have already received notification to ship the specialties for these orders.

The situation as to the orders placed by the United States government for service with the American troops in France has had much more to commend it than the Russian orders. Deliveries on the War Department orders have been better spaced, with regard, of course, to the shipping situation. But what has counted most has been the standardization and the fact that standardization began at the first stage of the game. Railway and supply men alike, reading the accounts of the delays over the standardization of the Liberty motor, the Liberty truck, the Enfield rifle, the Browning gun, the ships, have expressed their relief that in one industry at least the War Department was represented by a man who could take an instrument of warfare, in this case, a locomotive, and have it turned out, ready for shipment and a standard for a year's future production in 20 working days. As a result these U. S. A. Consolidation locomotives are keeping out of the way in the builders' plants and locomotives for American roads now have a clear path to completion and shipment.

Enough has been said to indicate that the situation as to domestic orders during the past year has been bad. Builders and specialty manufacturers alike have been postponing orders periodically and railway men have had to be pacified with the information that deliveries have been held up for them on account of more urgent war orders. This situation is now being remedied, so that the outlook both for deliveries and production in 1918 looks exceedingly favorable. Whether additional orders will be placed in the next few months is a question. The fact that the government has taken over the railroads is looked upon favorably, and with the easing up in prices and the improved deliveries, the supply field is confidently expecting a large buying movement. Upholding this belief is the fact that many railroads have reserved space for the coming year. The Norfolk & Western's order for the Mallet locomotives reported this week in part takes advantage of such a reservation and the New York Central has had a reservation of space for 250 locomotives with the American Locomotive Company since last September.

The tables on the following pages are detailed lists of the locomotives, freight cars and passenger cars ordered by the railways and industrial companies in the United States and Canada and also of the orders for equipment for export. A great effort has been made to make these lists as complete as possible. It will be found, however, that the orders do not add up to as great amounts as the totals given in the tables. In addition to the orders concerning which data is given, orders were also placed (as reported by the equipment builders) for 120 locomotives, concerning which it was impossible to obtain detailed information. Although, even with this, there may be some omissions of both domestic and foreign orders, it is likely that these omissions are very few and, under any condition, the results are sufficiently accurate to meet the general purpose for which these statistics are prepared, namely, to show the character and extent of the purchases of motive power this year as compared with preceding years.

TABLE IV—THE LOCOMOTIVES BUILT

1917

Domestic	2,585
Foreign	2,861
Total	5,446

IN PREVIOUS YEARS

Year	Locomotives	Year	Locomotives
1899	2,475	1908*	2,342
1900	3,153	1909*	2,887
1901	3,384	1910*	4,755
1902	4,070	1911*	3,530
1903	5,152	1912†	4,915
1904	3,441	1913†	5,332
1905*	5,491	1914†	2,235
1906*	6,952	1915†	2,085
1907*	7,362	1916†	4,075

*Includes Canadian output.
†Includes Canadian output and equipment built in railroad shops.

The information given herewith is compiled from official sources. The *Railway Age* in answer to its inquiries has received communications from practically all of the railroads and private car lines in the United States and Canada. In the case of foreign orders and where no replies were received from purchasers in this country, the details were taken from the weekly records or from the reports of builders.

As far as the domestic orders are concerned it will be noted from Table III that there have been, even with the smaller total of orders placed, increases in the number of Mikado, Pacific and Santa Fe locomotives. The Decapod, a new development in domestic locomotive design, has increased in favor as indicated by its adoption by the Canadian Pacific

and the Pennsylvania for heavy freight service. The number of Mallet locomotives shows, on the other hand, a decrease. There is also a considerable drop in the number of Mountain and Mohawk locomotives ordered, but this is merely the result of the New York Central's not having ordered any additional engines of this type since its big contracts for these locomotives last year. The most noticeable decrease in any one kind of locomotives was in switching locomotives; indeed the larger part of the decrease in the total is to be found in the light locomotives for railroads and industrial companies.

Of the steam locomotives ordered for railroad service in this country, that is excluding locomotives ordered for industrial or logging purposes, about 94 per cent were specified to be equipped with superheaters and approximately 80 per cent to be equipped with brick arches.

Special valve years have been specified on 422 locomotives including 327 Baker, 90 Southern, and 5 Young. Mechanical stokers have been specified for 615 locomotives, including 133 Street, 337 Duplex, 100 Crawford, 30 Standard and 15 Elvin. The last is a new stoker which has just been put on the market this year.

Locomotive Orders in 1917

From Companies in the United States and Canada

Purchaser	No.	Cylinders	Weight	Type	Superheater	Brick arch	Valve Gear	Mechanical Stoker	Builder
Alabama & Vicksburg	2	22 x 28	209,500	2-8-2	Yes	Yes	Walschaert	.....	Baldwin
Altoona Northern	2	.....	106,000	Geared	...	...	.....	.....	Heisler
Aluminum Company of America	1	22 x 28	203,000	0-8-0	...	Yes	.....	.....	American
American Column & Lumber Co.	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
American International Shipbuilding Corp.	3	21 x 28	173,000	0-6-0	Yes	Yes	.....	.....	Lima
Arisan Railway	2	3-8 x 10	56,000	Shay	...	...	.....	.....	Lima
Arizona Eastern	1	27½ x 32	348,000	2-10-2	Yes	No	.....	.....	American
	1	19 x 26	154,000	0-6-0	Yes	No	.....	.....	Baldwin
	1	19 x 26	154,000	0-6-0	Yes	No	.....	.....	Baldwin
Ashland, Odanah & Marengo	1	3-12 x 15	140,000	Shay	...	...	.....	.....	Lima
Atchison, Topeka & Santa Fe	70	27 x 32	322,000	2-8-2	Yes	Yes	Walschaert	.....	Baldwin
	5	28 x 28	346,500	4-8-2	Yes	Yes	Baker	Duplex (1 only)	Baldwin
	5	28 x 28	346,500	4-8-2	Yes	No	Walschaert	.....	Baldwin
	20	26 x 26	284,000	4-6-2	Yes	Yes	Walschaert	.....	Baldwin
	30	.....	.....	2-10-2	Yes	Yes	Walschaert	Duplex	Baldwin
Atlanta & West Point	4	27 x 39	280,000	2-8-2	Yes	Yes	.....	.....	Lima
Atlantic Coast Line	7	23 x 28	241,000	4-6-2	Yes	Yes	Walschaert	.....	Baldwin
	10	27 x 28	285,000	2-8-2	Yes	Yes	Walschaert	.....	Baldwin
	3	20 x 24	129,250	0-6-0	Yes	Yes	Walschaert	.....	Baldwin
Atlantic Refining Company	1	8 x 12	22,000	0-4-0	No	No	.....	.....	Baldwin
Baldwin Locomotive Works	2	22 x 26	160,000	0-6-0	No	No	.....	.....	Baldwin
	6	22 x 26	160,000	0-6-0	No	No	.....	.....	Baldwin
	1	18 x 24	103,000	0-4-0	No	Yes	.....	.....	Baldwin
Bee Tree Lumber Company	1	.....	80,000	Geared	...	...	.....	.....	Heisler
Bellgrade Lumber Co.	1	.....	52,000	Geared	...	...	.....	.....	Heisler
Belt Railway of Chicago	5	30 x 32	406,000	2-10-2	Yes	Yes	Baker	.....	Baldwin
Big Creek Logging Co.	2	3-11 x 12	100,000	Shay	...	...	.....	.....	Lima
Bliss, Dallet & Co.	1	11 x 16	52,000	0-6-0	...	...	.....	.....	American
Boston & Albany	6	23½ x 30	217,000	0-8-0	Yes	Yes	Baker	.....	Lima
Boston & Maine	2	.....	260,000	Electric	...	...	.....	.....	Westinghouse
Brooks-Scanlon Lumber Co.	1	3-12 x 15	140,000	Shay	...	...	.....	.....	Lima
Buffalo, Rochester & Pittsburgh	16	23½ & 37 x 32	427,000	2-6-6-2	Yes	Yes	Walschaert	Duplex	American
	6	28 & 44 x 32	548,000	2-8-8-2	Yes	Yes	Walschaert	Duplex	American
	3	24½ x 26	262,000	4-6-2	Yes	Yes	Walschaert	.....	American
	5	22 x 28	207,000	0-8-0	Yes	Yes	Walschaert	.....	American
	15	23½ & 37 x 32	429,000	2-6-6-2	Yes	Yes	Southern	Duplex	American
	1	28 & 44 x 32	548,000	2-8-8-2	Yes	Yes	Walschaert	Duplex	American
	5	24½ x 26	262,000	4-6-2	Yes	Yes	Walschaert	.....	American
	4	24½ x 28	230,000	0-8-0	Yes	Yes	Walschaert	.....	American
Cambria & Indiana	1	22 x 28	231,550	2-8-2	Yes	Yes	Walschaert	.....	Lima
Cambria Steel Company	2	21 x 26	135,000	0-6-0	No	No	.....	.....	Baldwin
	2	21 x 26	135,000	0-6-0	No	No	.....	.....	Baldwin
Canadian Government Railways	70	27 x 30	283,000	2-8-2	Yes	Yes	Walschaert	.....	Canadian
	30	27 x 30	283,000	2-8-2	Yes	Yes	Walschaert	.....	American
	10	26 x 32	324,000	2-10-2	Yes	Yes	Walschaert	.....	American
	10	23½ x 28	248,630	4-6-2	Yes	Yes	Walschaert	.....	American
Canadian Northern	10	24 x 32	220,000	2-8-0	Yes	Yes	Walschaert	.....	Can. Gen. Elec
Canadian Pacific	35	24 x 32	250,000	2-10-0	Yes	No	Walschaert	Oil Burner	Montreal shops
Carnegie Steel Co.	1	20 x 26	132,000	0-6-0	No	No	Baker	.....	Baldwin
Carolina, Clinchfield & Ohio	7	28 & 42 x 32	526,000	2-8-8-2	Yes	Yes	Baker	Duplex	Baldwin
	9	27 x 30	313,000	2-8-2	Yes	Yes	Baker	Duplex	Baldwin
Central of New Jersey	6	26 x 28	305,000	4-6-2	Yes	No	Walschaert	.....	Baldwin
	10	23 x 28	230,100	4-6-0	Yes	No	Walschaert	.....	Baldwin
	2	24 x 30	230,000	0-8-0	No	No	Walschaert	.....	Company shops
Central Pacific	31	27½ x 32	348,000	2-10-2	Yes	No	.....	.....	Baldwin
	5	19 x 26	154,000	0-6-0	Yes	No	.....	.....	Baldwin
Chicago & Alton	5	26 x 28	280,450	2-8-2	Yes	No	Walschaert	.....	Baldwin
Chicago & Eastern Illinois	7	30 x 32	382,000	2-10-2	Yes	Yes	Baker	Duplex	Baldwin
Chicago & Illinois Midland	2	22 x 28	225,000	2-8-2	...	...	.....	.....	American
Chicago & North Western	20	27 x 32	302,000	2-8-2	Yes	Yes	Baker	.....	American
	50	27 x 32	302,000	2-8-2	Yes	Yes	Baker	.....	American
Chicago, Burlington & Quincy	10	30 x 32	367,850	2-10-2	Yes	Yes	Walschaert	Duplex	Baldwin
	20	28 x 32	315,400	2-8-2	Yes	Yes	Walschaert	Duplex	Baldwin
	25	27 x 30	266,550	2-8-2	Yes	Yes	Walschaert	.....	Baldwin
	10	27 x 28	266,400	4-6-2	Yes	Yes	Walschaert	.....	Baldwin
Chicago, Indianapolis & Louisville	5	28 x 30	287,000	2-8-2	Yes	Yes	Walschaert	.....	American
Chicago, Milwaukee & St. Paul	5	.....	546,000	6886	Electric passenger		.....	.....	Gen. Elec.
	10	.....	572,000	....	Electric passenger		.....	.....	Westinghouse
	2	.....	140,000	404	Electric switching		.....	.....	Gen. Elec.
	2	.....	100,000	404	Electric freight		.....	.....	Gen. Elec.
Chicago, North Shore & Milwaukee	10	30 x 32	380,000	2-10-2	Yes	Yes	Baker	Duplex	American
Chicago, Rock Island & Pacific	20	28 x 30	326,700	2-8-2	Yes	Yes	Baker	.....	American
	2	25 x 32	244,000	2-8-0	Yes	Yes	Walschaert	.....	American
Chicago, Terre Haute & Southeastern	5	23½ x 26	274,000	4-6-2	Yes	Yes	Walschaert	.....	American
Cleveland, Cincinnati, Chicago & St. Louis	20	21 x 28	170,000	0-6-0	Yes	Yes	Walschaert	.....	Lima
Cobbs & Mitchell	1	3-12 x 12	130,000	Shay	...	...	.....	.....	Lima
Colorado & Wyoming	2	21 x 26	140,000	0-6-0	No	Yes	.....	.....	Baldwin
Colorado, Wyoming & Eastern	1	20 x 28	185,000	2-8-2	Yes	Yes	.....	.....	Baldwin
Columbia & Nehalem River	1	16 x 18	200,000	Geared	No	Yes	Walschaert	.....	Climax
Columbia, Newberry & Laurens	1	21 x 26	160,000	2-8-0	Yes	No	Walschaert	.....	Baldwin
Copper Range	2	22 x 28	200,000	2-8-0	Yes	Yes	Southern	.....	American
Copper River & Northwestern	1	20 x 28	195,000	2-8-2	...	...	.....	.....	American
Craig Mountain Lumber Co.	1	.....	126,000	Geared	...	...	.....	.....	Heisler
Creamery Packing Manufacturing Co.	1	.....	52,000	Geared	...	...	.....	.....	Heisler

Purchaser.	No.	Cylinders	Weight	Type	Super-heater	Brick arch	Valve Gear	Mechanical Stoker	Builder
Crowell & Spencer Lumber Co., Ltd	1	19 x 26	140,000	4-6-0	Yes	No	.....	.....	Baldwin
Cumberland Valley	2	22 x 24	180,300	0-6-0	Yes	Yes	Walschaert	.....	Penn. Alt. shops
Darnell, R. J.	1	.....	64,000	Geared	...	...	.....	.....	Heisler
Detroit & Toledo Shore Line	2	22 x 28	203,000	0-8-0	Yes	Yes	Walschaert	.....	American
Detroit Edison Company	1	21 x 26	140,000	0-6-0	No	Yes	.....	.....	Baldwin
Diamond & Caldor	1	3-11 x 12	120,000	Shay	...	...	.....	.....	Lima
Donora Southern	1	22 x 26	163,000	0-6-0	Yes	Yes	.....	.....	Baldwin
Dubach Lumber Co	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
East Broad Top	1	20 x 24	161,000	2-8-2	Yes	No	.....	.....	Baldwin
East Tennessee & Western North Carolina	1	16 x 22	100,000	4-6-0	No	No	Walschaert	.....	Baldwin
Elgin, Joliet & Eastern	8	24 x 28	218,000	0-8-0	Yes	Yes	Baker	.....	American
	8	28 x 30	313,900	2-8-2	Yes	Yes	Baker	.....	American
El Paso & Southwestern	5	29 x 30	321,000	2-8-2	Yes	...	.....	Street	American
Elwood Logging Co	1	3-10 x 10	72,000	Shay	...	...	.....	.....	Lima
Fort Smith & Western	2	22 x 28	200,300	2-8-2	Yes	Yes	Southern	.....	Baldwin
Frost Johnson Lumber Co	1	3-11 x 12	120,000	Shay	...	...	.....	.....	Lima
Galveston, Harrisburg & San Antonio Ry	12	27½ x 32	348,000	2-10-2	Yes	No	.....	.....	American
	4	19 x 26	154,000	0-6-0	Yes	No	.....	.....	Baldwin
Garfield Smelting Co	1	10 x 16	39,000	0-4-0	No	No	.....	.....	Lima
Georgia R. R.	1	27 x 30	280,000	2-8-2	Yes	Yes	.....	.....	Lima
Goodyear Lumber Co	1	3-12 x 15	150,000	Shay	...	...	.....	.....	Lima
Goodyear Redwood Lumber Co	1	3-11 x 12	100,000	Shay	...	...	.....	.....	Lima
Grafton & Upton	2	.....	60,000	404	Electric	freight	.....	.....	Gen. Electric
Grand Trunk	10	27 x 30	276,000	2-8-2	Yes	Yes	Baker	.....	Canadian
	5	27 x 30	276,000	2-8-2	Yes	Yes	Young	.....	American
Great Northern	50	28 x 32	229,000	2-8-2	Yes	No	Walschaert	Duplex	Baldwin
	25	26 x 28	220,000	0-8-0	Yes	No	Walschaert	.....	Baldwin
	15	26 x 28	220,000	0-8-0	Yes	No	Walschaert	.....	Baldwin
Green Bay & Western	2	.....	.....	2-6-0	...	...	.....	.....	American
Hammond Lumber Co	1	3-11 x 12	100,000	Shay	...	...	.....	.....	Lima
Haskell Carpenter Co	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
Illinois Central	20	26 x 28	278,000	4-6-2	Yes	Yes	Walschaert	.....	American
	20	21 x 26	169,000	0-6-0	Yes	Yes	Walschaert	.....	American
	35	27 x 30	282,700	2-8-2	Yes	Yes	Walschaert	.....	Baldwin
	50	27 x 30	282,700	2-8-2	Yes	Yes	Walschaert	.....	Lima
	25	21 x 26	169,000	0-6-0	Yes	Yes	Walschaert	.....	American
	4	29 x 32	367,000	2-10-2	Yes	Yes	Walschaert	.....	American
Illinois Terminal	1	20 x 24	121,000	2-6-0	No	No	.....	.....	Baldwin
Illinois Traction System	6	.....	120,000	Electric	...	...	.....	.....	Decatur shops
Illinois Zinc Company	1	18 x 24	120,000	0-6-0	No	Yes	.....	.....	Baldwin
Imperial Oil Co., Ltd	1	2-8 x 12	40,000	Shay	...	...	.....	.....	Lima
Independent Coal & Coke Co	1	3-8 x 10	56,000	Shay	...	...	.....	.....	Lima
Indiana Harbor Belt	5	23½ x 30	217,000	0-8-0	Yes	Yes	Baker	.....	Lima
Inman Poulson Logging Co	1	3-11 x 12	100,000	Shay	...	...	.....	.....	Lima
Kanawha, Glen Jean & Eastern	1	22 x 28	218,500	2-8-2	No	No	.....	.....	Baldwin
Kansas City Southern	7	24 x 28	494,000	2-8-8-0	Yes	Yes	Walschaert	.....	American
Kelly Island Lime & Transport Co	3	3-8 x 8	48,000	Shay	...	...	.....	.....	Lima
Larkins Green Logging Co	1	.....	106,000	Geared	...	...	.....	.....	Heisler
Lehigh Valley	11	27 x 28	301,500	4-6-2	Yes	Yes	Walschaert	Street	Baldwin
	10	27 x 28	301,500	4-6-2	Yes	Yes	Baker	Street	Baldwin
	30	29 x 32	370,600	2-10-2	Yes	Yes	Walschaert	Street	Baldwin
	10	29 x 32	370,600	2-10-2	Yes	Yes	Baker	Street	Baldwin
Long Pine Lumber Co	1	3-11 x 12	100,000	Shay	...	...	.....	.....	Lima
Longville Lumber Co	1	3-12 x 12	130,000	Shay	...	...	.....	.....	Lima
Los Angeles & Salt Lake	6	29½ x 30	357,600	2-10-2	Yes	Yes	Walschaert	.....	Baldwin
Louisville & Nashville	6	23½ x 30	219,000	0-8-0	Yes	Yes	Walschaert	.....	Company shops
	18	27 x 30	302,000	2-8-2	Yes	Yes	Walschaert	.....	Company shops
	18	28 x 30	337,000	2-8-2	Yes	Yes	Walschaert	.....	Company shops
	6	22 x 28	232,000	4-6-2	Yes	Yes	Walschaert	.....	Company shops
Lukens Steel Co	1	.....	72,000	Geared	...	...	.....	.....	Heisler
Lunkenheimer Co.	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
McKeesport Connecting	2	22 x 28	165,000	0-6-0	No	No	.....	.....	Baldwin
McLean Arkansas Lbr	1	.....	44,000	Geared	...	...	.....	.....	Heisler
Manufacturers' Ry.	2	.....	160,000	0440	Electric	switch	.....	.....	Gen. Electric
Manville Asbestos Co	2	18 x 24	116,285	0-6-0	...	...	.....	.....	Canadian
Mayer Bros. Construction Co	2	10 x 16	39,000	0-4-0	...	...	.....	.....	Lima
Michigan Alkali Co	1	19 x 24	115,000	0-6-0	No	Yes	.....	.....	Baldwin
Michigan Central	10	23½ x 26	276,000	4-6-2	Yes	Yes	Walschaert	.....	American
	10	23½ x 30	217,000	0-8-0	Yes	Yes	Baker	.....	Lima
Middletown Car Co	1	18 x 24	120,000	0-6-0	No	Yes	.....	.....	Baldwin
Midland Valley	1	22 x 28	186,500	2-8-0	No	Yes	.....	.....	Baldwin
	1	19 x 24	128,000	0-6-0	Yes	Yes	Southern	.....	Baldwin
Milwaukee Coke & Gas Co	1	.....	.....	0-6-0	...	...	.....	.....	Baldwin
Missouri, Kansas & Texas	1	10 x 16	39,000	0-4-0	No	No	.....	.....	Lima
Mitchell, W. G., Lbr. Co	1	.....	64,000	Geared	...	...	.....	.....	Heisler
Mockezuma Copper Co	1	18 x 20	114,000	2-8-0	Yes	No	.....	.....	Baldwin
Monongahela Railway	6	22½ x 30	178,340	2-8-0	Yes	Yes	Baker	.....	American
Monongahela Valley Traction	1	.....	80,000	Electric	...	...	.....	.....	Westinghouse
Morgan & Wright	1	3-12 x 12	120,000	Shay	...	...	.....	.....	Lima
Morgantown & Kingwood	1	22 x 28	181,000	2-8-0	Yes	Yes	Walschaert	.....	Baldwin
Mountain Copper Co	1	3-10 x 10	72,000	Shay	...	...	.....	.....	Lima
Nashville, Chattanooga & St. Louis	10	25 x 30	272,000	2-8-2	Yes	Yes	Walschaert	.....	Baldwin
Newburgh & South Shore	3	22 x 28	178,000	0-6-0	Yes	Yes	.....	.....	Baldwin
	1	24 x 30	221,700	0-8-0	Yes	Yes	.....	.....	Baldwin
Newport Chemical Works, Inc	1	18 x 24	100,000	0-6-0	No	Yes	.....	.....	Baldwin
New York Central	35	23½ x 26	271,000	4-6-2	Yes	Yes	Walschaert	.....	American
	45	28 x 28	343,000	4-8-2	Yes	Yes	Walschaert	.....	Lima
	4	23½ x 30	217,000	0-8-0	Yes	Yes	Baker	.....	Lima
New York, Chicago & St. Louis	10	21 x 28	173,000	0-6-0	Yes	Yes	Walschaert	.....	Lima
	5	23½ x 30	217,000	0-8-0	Yes	Yes	Walschaert	.....	Lima
New York, New Haven & Hartford	50	30 x 32	365,000	2-10-2	Yes	Yes	Baker	Duplex	American
	5	.....	360,000	Electric	...	...	.....	.....	Westinghouse
	1	.....	290,000	4-4-4-4	Electric	passenger	.....	.....	Gen. Electric
Nimpkish Timber Co	1	3-12 x 12	120,000	Shay	...	...	.....	.....	Lima
Norfolk & Western	11	24½ & 39 x 32	535,000	2-8-8-2	Yes	Yes	Baker	Duplex	Roanoke shops
	20	23 & 35 x 32	420,000	2-6-6-2	Yes	Yes	Baker	Duplex	American
	20	24½ & 39 x 32	535,000	2-8-8-2	Yes	Yes	Baker	Duplex	Baldwin
North American Sugar Co	1	.....	.....	2-8-0	...	...	.....	.....	Baldwin
	1	.....	.....	2-6-0	...	...	.....	.....	Baldwin
Northern Ohio Traction & Light Co	1	.....	100,000	404	Electric	freight	.....	.....	Gen. Electric
Northern Pacific	60	28 x 30	328,000	2-8-2	Yes	Yes	Walschaert	.....	American
	5	26 & 40 x 30	465,000	2-8-8-2	Yes	Yes	Walschaert	.....	American
O'Connell, N. J.	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
Ogden, Logan & Idaho	2	.....	103,000	Electric	...	...	.....	.....	Westinghouse

Purchaser.	No.	Cylinders	Weight	Type	Super-heater	Brick arch	Valve Gear	Mechanical Stoker	Builder
Oregon Short Line	10	26 x 28	286,000	2-8-2	Yes	Yes	Walschaert	Street	Lima
	1	26 & 41 x 32	500,000	2-8-8-0	Yes	Yes	Walschaert	Street	American
	5	19 x 26	154,700	0-6-0	Yes	Yes	Walschaert	.....	Baldwin
	5	25 x 28	278,000	4-6-2	Yes	Yes	Walschaert	.....	Baldwin
	10	26 x 28	286,000	2-8-2	Yes	Yes	Walschaert	Street	Baldwin
Oregon-Washington R. R. & Navigation Co.	2	25 x 28	278,000	4-6-2	Yes	Yes	Walschaert	.....	Baldwin
	6	26 x 28	286,000	2-8-2	Yes	Yes	Walschaert	.....	Baldwin
Oval Wood Dish Company	1	.....	126,000	Geared	...	...	.....	.....	Heisler
Pacific Commercial Co	1	3-8 x 10	56,000	Shay	...	...	.....	.....	Lima
Pardee & Curtin Lumber Co	1	3-10 x 10	72,000	Shay	...	...	.....	.....	Lima
Peavy-Wilson Lumber Co	1	3-11 x 12	120,000	Shay	...	...	.....	.....	Lima
Pennsylvania Railroad	134	27 x 30	320,700	2-8-2 (L1s)	Yes	Yes	Walschaert	Duplex (1 only)	Juniata shops
	122	30 x 32	366,550	2-10-0 (I1s)	Yes	Yes	Walschaert	.....	Juniata shops
	93	27 x 28	308,890	4-6-2 (K4s)	Yes	Yes	Walschaert	.....	Juniata shops
	62	22 x 24	180,300	0-6-0 (B6sb)	Yes	Yes	Walschaert	.....	Juniata shops
	21	20 x 24	131,750	0-4-0 (A5s)	Yes	Yes	Walschaert	.....	Juniata shops
	30	27 x 30	320,700	2-8-2 (L1s)	Yes	Yes	Walschaert	.....	Baldwin
	1	.....	500,000	Electric	...	...	.....	.....	Westinghouse
Pennsylvania Lines West	30	27 x 28	309,910	4-6-2	Yes	Yes	Walschaert	Crawford	Juniata shops
	35	30 x 32	411,000	2-10-2	Yes	Yes	Walschaert	Crawford	American
	10	26 & 40 x 28	466,000	0-8-8-0	Yes	Yes	Walschaert	Crawford	Baldwin
	25	30 x 32	411,000	2-10-2	Yes	Yes	Walschaert	Crawford	Baldwin
Pere Marquette	10	22 x 28	206,000	0-8-0	Yes	Yes	Walschaert	.....	American
	15	26 x 32	321,000	2-10-2	Yes	Yes	Baker	.....	American
Philadelphia & Reading	10	25 x 28	273,600	4-6-2	Yes	No	Walschaert	.....	Company shops
	10	23 x 28	169,800	0-6-0	No	No	Walschaert	.....	Company shops
	20	25 x 32	277,490	2-8-0	Yes	No	Walschaert	Standard	Baldwin
	15	26 & 40 x 32	478,500	2-8-8-2	Yes	No	Walschaert	Duplex	Baldwin
	10	26 & 40 x 32	478,500	2-8-8-2	Yes	No	Walschaert	Standard	Baldwin
Philadelphia, Baltimore & Washington	29	27 x 28	308,890	4-6-2 (K4s)	Yes	Yes	Walschaert	.....	Pa. Juniata shps.
	6	22 x 24	180,300	0-6-0 (B6sb)	Yes	Yes	Walschaert	.....	Pa. Juniata shps.
	5	20 x 24	131,750	0-4-0 (A5s)	Yes	Yes	Walschaert	.....	Pa. Juniata shps.
Philadelphia Suburban Gas & Elec. Co	1	13 x 18	61,000	0-4-0	No	No	.....	.....	Baldwin
	1	13 x 18	61,000	0-4-0	No	No	.....	.....	Baldwin
Phoenix Iron Co	1	11 x 16	39,800	0-4-0	No	No	.....	.....	Baldwin
Pierce Coal Co	1	9 x 14	26,500	0-4-0	No	No	.....	.....	Baldwin
Pine Run Coal Co	1	3-13½ x 15	160,000	Shay	...	...	.....	.....	Lima
Piqua Handle & Mfg. Co	1	3-10 x 10	72,000	Shay	...	...	.....	.....	Lima
Pittsburgh & Lake Erie	5	23½ x 26	276,000	4-6-2	Yes	Yes	Walschaert	.....	American
Pittsburgh, McKeesport & Youghiogheny	5	27 x 30	319,000	2-8-2	Yes	Yes	Walschaert	.....	American
Pot Ridge Coal Co	1	3-11 x 12	100,000	Shay	...	...	.....	.....	Lima
Prichard Wheeler Lbr. Co	1	.....	52,000	Geared	...	...	.....	.....	Heisler
Public Service Electric Co	1	18 x 24	120,000	0-6-0	No	Yes	.....	.....	Baldwin
Quebec Central	3	20 x 26	169,000	2-6-0	Yes	No	.....	.....	Canada Fdy. Co.
Queen City Crushed Stone & Sand Co	1	10 x 16	39,000	0-4-0	No	No	.....	.....	Lima
Raritan River	3	20 x 24	167,000	2-8-2	No	Yes	Walschaert	.....	Baldwin
	1	20 x 26	170,000	4-6-2	No	Yes	Walschaert	.....	Baldwin
Red River & Gulf	1	18 x 26	129,000	4-6-0	Yes	No	.....	.....	Baldwin
Reid Newfoundland Co	4	17 x 22	92,100	4-6-0	No	Yes	.....	.....	Baldwin
Republic Iron & Steel Co	2	22 x 26	175,000	2-6-0	No	Yes	.....	.....	Baldwin
Richmond, Fredericksburg & Potomac	6	26 x 28	290,000	4-6-0	Yes	Yes	Walschaert	.....	American
	1	24 x 28	229,000	0-8-0	Yes	Yes	Walschaert	.....	American
	1	21 x 28	172,000	0-6-0	Yes	Yes	Walschaert	.....	American
	2	20 x 26	131,500	0-6-0	Yes	Yes	Walschaert	.....	Baldwin
Roy-Millner Coal Co	1	2-6 x 10	26,000	Shay	...	...	.....	.....	Lima
St. Clair Refining Company	1	.....	.....	0-6-0	...	...	.....	.....	American
St. Joseph Union Terminal	1	21 x 26	140,000	0-6-0	No	Yes	.....	.....	Baldwin
St. Paul Union Depot	1	.....	.....	0-6-0	...	Yes	.....	.....	Lima
Seaboard Air Line	16	26½ & 42 x 32	497,600	2-8-8-2	Yes	Yes	Southern	Duplex	American
	10	29 x 32	336,000	2-10-2	Yes	Yes	Southern	Duplex	Baldwin
Semet-Solvay Co.	1	14 x 22	70,000	0-4-0	No	No	.....	.....	American
	1	19 x 26	135,000	0-6-0	Yes	Yes	.....	.....	Lima
Sewell Valley	1	3-14½ x 15	180,000	Shay	...	...	.....	.....	Lima
Shevlin-Hixon Co.	1	3-12 x 15	140,000	Shay	...	...	.....	.....	Lima
Silver Falls Timber Co	1	20½ x 28	179,000	2-8-2	Yes	No	.....	.....	Baldwin
Smith Powers Logging Co	1	.....	150,000	Geared	...	...	.....	.....	Heisler
Snohomish Logging Co	1	.....	84,000	Geared	...	...	.....	.....	Heisler
Southern Pacific	10	27½ x 32	348,000	2-10-2	Yes	No	.....	.....	American
	1	26¼ x 32	345,000	2-10-2	Yes	No	.....	.....	American
	10	27½ x 32	348,000	2-10-2	Yes	No	.....	.....	Baldwin
	10	19 x 26	154,000	0-6-0	Yes	No	.....	.....	Baldwin
Southern Pacific Co.—Pacific System	4	23 x 28	218,500	4-6-0	Yes	No	Walschaert	(Oil Burner)	Company shops
	2	22 x 28	222,000	4-6-2	Yes	No	.....	(Oil Burner)	Company shops
	9	22 x 30	217,800	2-8-0	Yes	No	.....	(Oil Burner)	Company shops
	5	21 x 28	184,000	2-6-0	Yes	No	.....	(Oil Burner)	Company shops
Southern Railway	15	28 x 32	367,000	2-10-2	Yes	Yes	Southern	Elvin	American
	10	28 x 32	367,000	2-10-2	Yes	Yes	Southern	Street	American
Stoddard Lbr. Co	1	.....	72,000	Geared	...	...	.....	.....	Heisler
Suburban Gas & Electric Co	1	.....	.....	0-4-0	...	...	.....	.....	Baldwin
Surry Lumber Co	1	8 x 12	27,000	0-4-2	No	No	.....	.....	Baldwin
Surry, Sussex & Southampton	1	14 x 20	70,900	4-6-0	No	Yes	.....	.....	Baldwin
Swayne Lumber Co	1	3-11 x 12	120,000	Shay	...	...	.....	.....	Lima
Swift & Co	1	.....	.....	0-6-0	...	...	.....	.....	Baldwin
Tacajo Sugar Corporation	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
Terminal R. R. Assn. of St. Louis	10	22½ x 30	202,000	0-6-0	Yes	Yes	Walschaert	.....	American
Texas & New Orleans	4	19 x 26	154,000	0-6-0	Yes	No	.....	.....	Baldwin
Texas & Pacific	7	26 x 28	266,700	4-6-2	Yes	Yes	Southern	(Oil Burner)	Baldwin
	12	28 x 32	324,600	2-10-2	Yes	Yes	Southern	Duplex	Baldwin
Texas, Oklahoma & Eastern	1	16 x 24	105,800	2-6-2	No	No	.....	.....	Baldwin
Toledo Terminal	2	22 x 28	199,000	2-8-0	Yes	Yes	Walschaert	.....	American
Toronto, Hamilton & Buffalo	10	21 x 28	166,000	0-6-0	Yes	Yes	Walschaert	.....	Canadian
Tremont & Gulf	1	21 x 26	181,000	2-8-2	Yes	Yes	Walschaert	.....	Baldwin
Union	2	20 x 26	159,000	0-6-0	No	No	.....	.....	Baldwin
	1	20 x 26	159,000	0-6-0	No	No	.....	.....	American
Union Carbide Co	1	.....	.....	0-4-0	...	...	.....	.....	American
Union Pacific	15	26 & 41 x 32	500,000	2-8-8-0	Yes	Yes	Walschaert	Street	American
	6	29½ x 30	357,600	2-10 2	Yes	Yes	Walschaert	Street	Baldwin
	20	19 x 26	154,700	0-6-0	Yes	No	Walschaert	.....	Baldwin
	15	26 x 28	286,000	2-8-2	Yes	Yes	Walschaert	Street	Baldwin
	5	29½ x 30	357,600	2-10-2	Yes	Yes	.....	.....	Baldwin
U. S. Metals Refining Co	1	8 x 12	20,200	0-4-0	No	No	.....	.....	Baldwin
United States War Department	1	.....	.....	Armored	...	...	.....	.....	American
Vilas County Lumber Co	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
Von Platen Lumber Co	1	3-11 x 12	100,000	Shay	...	...	.....	.....	Lima
Vredenburgh Saw Mill Co	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
Western Chemical Mfg. Co	1	5 x 10	12,000	0-4-0	No	No	.....	.....	Baldwin
Western Pine Lumber Co	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima

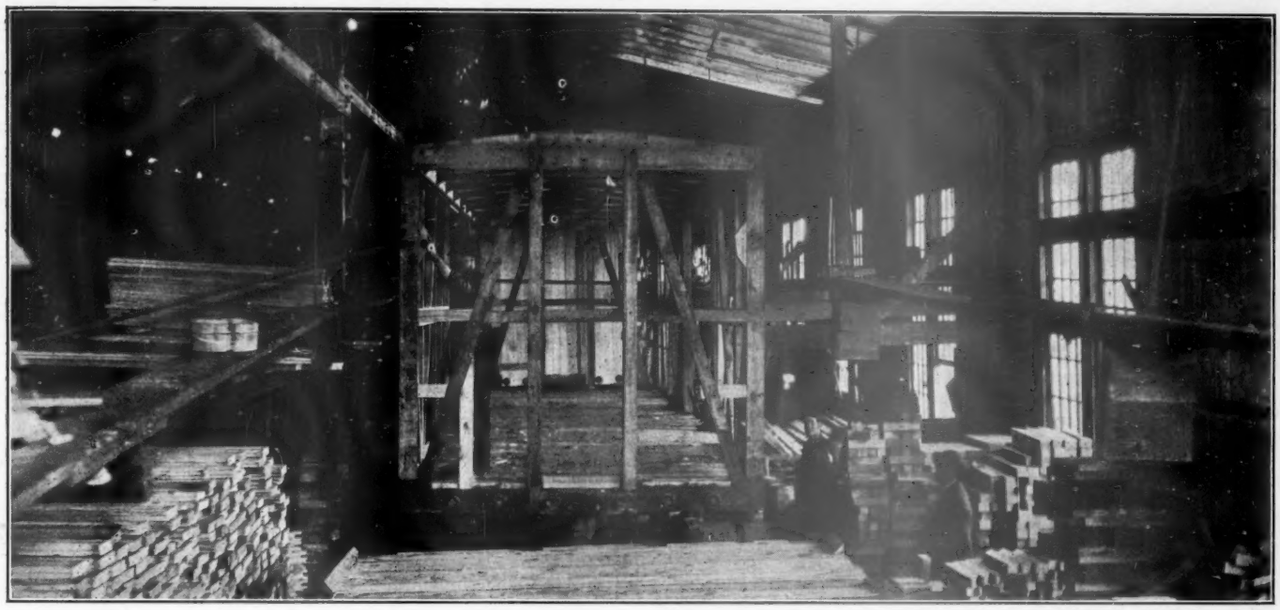
Purchaser.	No.	Cylinders	Weight	Type	Super-heater	Brick arch	Valve Gear	Mechanical Stoker	Builder
Western Steel Car & Foundry Co.	1	20 x 26	129,000	0-6-0	...	...	.....	.....	American
West Side Belt	3	25 x 32	234,000	2-8-0	Yes	Yes	Walschaert	.....	American
Wheeler Lumber Co.	1	.....	84,000	Geared	...	...	.....	.....	Heisler
White, J. G., Engrg. Co.	1	300 hp. Gasoline Mech. drive			...	...	.....	.....	McKeen
Wilderness Lumber Co.	1	3-10 x 10	72,000	Shay	...	...	.....	.....	Lima
Wood, Alan, Iron & Steel Co.	1	9 x 24	24,000	0-4-0	No	No	.....	.....	Baldwin
	1	12 x 16	45,000	0-4-0	No	No	.....	.....	Baldwin
	1	14 x 18	62,000	0-4-0	No	No	.....	.....	Baldwin
Wood Russ Lumber Co.	1	3-10 x 10	72,000	Shay	...	...	.....	.....	Lima
Woodstock Lumber Co.	1	3-11 x 12	100,000	Shay	...	...	.....	.....	Lima
Worth Bros. Co.	2	14 x 16	63,600	0-4-0	No	No	.....	.....	Baldwin
	1	22 x 26	156,700	0-6-0	No	No	.....	.....	Baldwin
Wyandotte Terminal Railroad	1	.....	.....	0-6-0	...	...	.....	.....	Baldwin
Youngstown & Ohio River	1	.....	100,000	Electric	...	...	.....	.....	Westinghouse
Youngstown Sheet & Tube Co.	4	22 x 26	151,000	0-6-0	No	No	.....	.....	Baldwin

For the American Railways in France

United States War Department (for France)	830	21 x 28	166,400	2-8-0	Yes	No	Stephenson	.....	Baldwin
	150	23 x 26	161,000	2-8-0	Yes	Yes	Walschaert	.....	American
	20	7¾ x 12	46,000	0-4-0	(Gasoline)		.....	.....	Baldwin
	30	12 x 18	60,000	0-4-0	No	No	.....	.....	Vulcan
	195	9 x 12	34,500	2-6-2	No	No	Walschaert	.....	Baldwin
	126	5½ x 7	14,000	0-4-0	(Gasoline)		.....	.....	Baldwin
	63	5 x 6	8,000	0-4-0	(Gasoline)		.....	.....	Baldwin
	6	10 x 16	38,000	0-4-0	No	Yes	.....	.....	Vulcan
	36	12 x 18	48,000	0-6-0	No	No	.....	.....	Porter
	600	.....	.....	0-4-0	(Gasoline)		.....	.....	Baldwin

Orders from Railways in Other Countries

Alapaeff Mining Co. (Russia)	9	.....	.....	0-6-0	...	...	.....	.....	Baldwin
American R. R. of Porto Rico	4	14 x 20	81,000	4-6-0	Yes	Yes	.....	.....	Baldwin
	2	13 x 18	70,500	0-6-0	No	Yes	.....	.....	Baldwin
	3	14 & 20 x 20	.....	2-8-0	...	...	.....	.....	American
Antofagasta Nitrate Co. (Chile)	2	15 x 20	85,000	2-6-2	No	No	.....	.....	Baldwin
Aranco Co., Ltd. (Chile)	1	12 x 18	54,000	0-6-0	No	No	.....	.....	Baldwin
	1	15 x 22	110,900	2-6-2	No	Yes	.....	.....	Baldwin
Arica-La Paz Ry. (Chile)	3	16 & 25 x 22	150,000	0-6-6-0	Yes	Yes	.....	.....	Baldwin
British War Office	50	.....	.....	2-8-0	...	...	.....	.....	Baldwin
	75	.....	.....	2-6-2	...	...	.....	.....	Baldwin
	50	.....	.....	0-6-0	...	...	.....	.....	Baldwin
	100	.....	.....	2-8-0	...	...	.....	.....	Baldwin
Central Algodones (Cuba)	2	18 x 22	118,900	2-8-0	Yes	No	.....	.....	Baldwin
Central Constancia (Cuba)	1	12 x 18	50,400	2-6-0	No	No	.....	.....	Baldwin
Central Cunagua (Cuba)	1	20 x 18	69,200	0-4-0	Fireless		.....	.....	Baldwin
Central El Lugareno (Cuba)	2	.....	.....	2-6-0	...	...	.....	.....	Baldwin
Central Narcisa (Cuba)	1	14 x 20	73,000	2-8-0	No	No	.....	.....	Baldwin
Central R. R. of Brazil	2	16 x 20	97,000	2-8-0	Yes	Yes	.....	.....	Baldwin
Central Portugalete (Cuba)	1	12 x 16	52,000	2-8-0	No	No	.....	.....	Baldwin
Central San Ramon (Cuba)	1	13 x 18	52,800	2-6-0	No	No	.....	.....	Baldwin
Central Soledad (Cuba)	2	12 x 18	46,000	2-6-0	No	No	.....	.....	Baldwin
Central Vitoria (Cuba)	1	14 x 20	76,600	2-8-0	No	No	.....	.....	Baldwin
Chaparra Sugar Co. (Cuba)	1	15 x 20	74,000	2-6-0	No	No	.....	.....	Baldwin
Chemin de Fer du Midi (France)	40	23 x 26	161,000	2-8-0	...	Yes	.....	.....	American
Chosen Railway Bureau (Korea)	12	21 x 26	155,000	4-6-0	Yes	Yes	.....	.....	Baldwin
Cie Francaise de Metaux (France)	1	.....	.....	0-4-0	...	...	.....	.....	Baldwin
Cuba Cane Sugar Corp. (Cuba)	3	18 x 22	118,600	2-8-0	Yes	No	.....	.....	Baldwin
Cuban American Sugar Co. (Cuba)	1	14 x 18	60,200	2-6-0	No	Yes	.....	.....	Baldwin
Egyptian State Railways	70	.....	.....	4-6-0	...	...	.....	.....	Baldwin
Estate Monymusk (Jamaica)	2	7 x 10	16,500	0-4-2	No	No	.....	.....	Baldwin
F. C. de Caldas (Colombia)	1	14 x 18	66,200	2-6-0	No	No	.....	.....	Baldwin
F. C. de Lima a Lurin (Peru)	1	14 x 18	69,350	2-8-0	No	No	.....	.....	Baldwin
F. C. del Pacifico (Colombia)	3	16 x 20	92,350	2-6-0	No	Yes	.....	.....	Baldwin
Ferrocarril Central Dominicano	1	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
Ferrocarril La Paz-Yungas	2	3-10 x 12	84,000	Shay	...	...	.....	.....	Lima
Fuji Minobu Ry. (Japan)	2	15 x 20	90,500	2-6-2	No	Yes	.....	.....	Baldwin
Graham, Hinkley & Co. (Yucatan)	2	15 x 20	75,400	4-6-0	No	No	.....	.....	Baldwin
Guantanamo Sugar Co. (Cuba)	1	13 x 18	70,400	2-6-2	No	No	.....	.....	Baldwin
Hunan Mining Bureau (China)	1	8 x 12	18,200	0-4-0	No	No	.....	.....	Baldwin
Inter. Engineering & Trading Co. (Russia)	2	.....	.....	0-6-0	...	...	.....	.....	Baldwin
Jayme Arthur Marques (Africa)	1	6 x 10	11,900	0-4-0	No	No	.....	.....	Baldwin
Knox, Wm. H., & Co., Inc. (Peru)	2	13 x 18	56,450	2-8-0	No	No	.....	.....	Baldwin
Kure Naval Yard (Japan)	1	.....	97,000	0-4-0	...	...	.....	.....	American
	2	.....	42,000	0-4-0	...	...	.....	.....	American
Lihue Plantation Co. (Hawaii)	1	11 x 16	45,000	0-6-2	No	No	.....	.....	Baldwin
Linde Brothers (Jamaica)	1	.....	.....	0-4-2	...	...	.....	.....	Baldwin
Lindeteves Stokvis (Dutch East Indies)	1	9½ x 14	33,000	0-8-0	...	...	.....	.....	American
Manati Sugar Co. (Cuba)	4	15 x 20	78,650	2-8-0	No	Yes	.....	.....	Baldwin
Morrell, John, & Co.	1	20 x 24	129,600	0-6-0	No	No	.....	.....	Baldwin
Northern Railway of France	50	.....	.....	2-8-2	...	...	.....	.....	Baldwin
Northern Railway of Spain	40	23 x 25¼	196,000	2-8-2	Yes	Yes	.....	.....	American
Ome Ry. (Japan)	2	15 x 20	90,500	2-6-2	No	Yes	.....	.....	Baldwin
Oving, H. E., Jr. (Java)	1	6 x 10	12,500	0-4-0	No	No	.....	.....	Baldwin
Paris Orleans Railway (France)	50	597 x 711 mm	200,000	2-8-2	Yes	...	.....	.....	American
Peruvian Corp., Ltd.	1	16 x 24	93,500	2-6-0	No	No	.....	.....	Baldwin
Ponce & Guayama R. R. (Porto Rico)	1	14 x 20	80,000	2-8-0	No	No	.....	.....	Baldwin
Porvenir Sugar Co. (Santo Domingo)	1	11 x 16	45,300	2-6-0	No	No	.....	.....	Baldwin
Rhodesian Railway	6	22 x 24	172,000	4-8-2	Yes	Yes	.....	.....	American
Robla Railway	1	16 x 24	118,000	0-8-0	...	...	.....	.....	American
Russian Government	53	.....	.....	N.g. Mallet	...	...	.....	.....	Baldwin
	75	25 x 28	197,000	2-10-0	Yes	Yes	.....	.....	Baldwin
	250	25 x 28	197,000	2-10-0	Yes	Yes	.....	.....	Baldwin
	250	25 x 28	197,000	2-10-0	Yes	Yes	.....	.....	American
	68	11 x 16	45,000	0-6-0	...	...	.....	.....	American
	750	25 x 28	197,000	2-10-0	Yes	Yes	.....	.....	Baldwin
	750	25 x 28	197,000	2-10-0	Yes	Yes	.....	.....	American
Shantung Railway (China)	2	20½ x 26	160,000	2-8-0	Yes	Yes	.....	.....	American
Sorocobana Railroad (Brazil)	3	19 x 20	134,000	2-8-2	Yes	...	.....	.....	American
	5	17¼ x 20	118,000	4-6-2	Yes	...	.....	.....	American
South African Railways	8	16½ & 26 x 24	194,000	Mallet	...	...	.....	.....	American
	10	22 x 28	200,000	4-8-2	...	...	.....	.....	American
	20	22 x 26	175,000	4-8-2	Yes	...	.....	.....	American
South Manchurian Railway	2	.....	112,000	404	Electric	freight	.....	.....	Gen. Electric
Sun Ning Railway (China)	2	15 x 24	84,500	2-6-0	No	Yes	.....	.....	Baldwin
Trinidad Shipping & Trading Co. (Trinidad)	1	9 x 14	34,000	0-4-0	...	...	.....	.....	American
Union Miniere du Haut Katanga	4	10 x 16	48,000	0-6-0	...	...	.....	.....	American
Usina Sao Bento (Brazil)	1	12 x 18	55,900	2-4-2	No	No	.....	.....	Baldwin



Freight Car Orders in 1917 Reach Low Level

Total of 158,965 Compares With 205,368 in 1916. Domestic Orders Lowest Since the Year 1908

THE ORDERS FOR FREIGHT CARS in 1917 totaled 158,965, including 74,274 for domestic uses, 18,844 for the United States Government and 65,676 for France, Russia and other foreign countries. The total of all orders compares with 205,368 in 1916; the difference, however, is much greater than indicated by these figures because the 1917 figures include 30,500 cars for Russia, the orders for which are now held in abeyance and which indeed may never be executed.

TABLE I—THE FREIGHT CAR ORDERS IN 1917

Domestic—Including railroads and private car lines in the United States and Canada:		
From builders	58,443	
From company shops	20,924	
Total domestic		79,367
United States Government:		
For service overseas	18,844	
For use in this country	180	
Total United States Government		19,024
France	21,700	
Russia	42,500*	
Other foreign	1,467	
Total foreign		64,667*
Total of all orders		164,058*

*Including the 30,500 Russian cars, orders for which are held in abeyance.

The passenger cars ordered total 1167, including 1124 for domestic uses, this figure being one of the smallest since the *Railway Age* began its compilations in 1901.

Of freight cars ordered this year about 43 per cent are for foreign delivery either for the United States Government or for its Allies. The orders for 79,367 cars ordered by the railways in this country for domestic use is the smallest number ordered since these records were first kept, with the exception of 1908 at which time 62,669 cars were ordered. Of this 79,367 there were about 21,000, or 27 per cent, ordered to be built by the railways themselves. In number this slightly exceeds those ordered to be built in company shops last year, but in percentage of total cars ordered, the ratio is about double that of last year.

The shop orders were placed during the early part of the year when the prices and deliveries of the builders were at their worst. With this large number of shop cars and the shortage of steel there were a much smaller number of the all-wood construction cars ordered than would be expected.

Of the nearly 80,000 cars ordered only about 5,000, or 6.2 per cent, were all-wood cars. This is in about the same proportion as last year and the figures for both years are of course much larger than the immediate previous years. As steel for the underframes became more available during the year less all-wood cars were ordered.

TABLE II—THE PASSENGER CAR ORDERS IN 1917

Domestic:	
From builders	1,005
From company shops	119
Total domestic	1,124
U. S. Government	6
Foreign	37
	1,167

Of all the cars ordered there was proportionate decrease in box and hopper cars and a proportionate increase in refrigerator, gondola, flat and tank cars over the preceding years. The proportion of all-steel, steel underframes and other kinds of equipment remained practically the same.

TABLE III—DOMESTIC ORDERS FOR CARS SINCE 1901

	Freight Cars.	Passenger Cars.		Freight Cars.	Passenger Cars.
1901	193,439	2,879	1909	189,360	4,514
1902	195,248	3,459	1910	141,024	3,881
1903	108,936	2,310	1911	133,117	2,623
1904	136,561	2,213	1912	234,758	3,642
1905	341,315	3,289	1913	146,732	3,179
1906	310,315	3,402	1914	80,264	2,002
1907	151,711	1,791	1915	109,792	3,101
1908	62,669	1,319	1916	170,054	2,544
				Freight Cars.	Passenger Cars.
1917				79,367	1,167

The freight car situation during the year has not been

exactly favorable either with the railways or the builders. The prices have been so high that the railways have not dared to come into the markets. As a result the builders have been operating in some cases at as low as 50 or even 25 per cent of capacity and as one manufacturer has put it, "when there were orders there was a shortage of labor and material, or when there was material, a shortage of labor." The United States Government orders for the forces in France have helped the situation considerably and it is to Russian requirements, as was the case for locomotives, as mentioned elsewhere in this issue.

While 1917 may not have been exceedingly bright from the standpoint of freight car orders, the situation as to the immediate future is exactly the opposite. The opportunities for the railways to obtain cars were never better than at present. With the material situation much better than it was last year at this time and with a smaller number of orders on their books, the car builders are in a position to give

TABLE A—CLASSIFICATION OF FREIGHT CARS ORDERED DURING 1917

	All-steel	Steel frame and St. U. F.	Steel underframe	Steel center sills	Wood	Not Specified	Total
Box	3,253	9,300	3,634	7,902	518	652	25,259
Refrigerator	.....	400	6,889	100	351	.....	7,740
Hopper, including ore	9,737	1,100	86	50	300	.....	11,273
Gondola	5,597	3,925	2,864	2,702	13	104	15,205
Coal (not otherwise specified)	.....	.....	1,095	.....	1	.....	1,096
Stock	.....	.....	1,650	1,100	1,711	1	4,462
Flat	749	.....	142	754	373	128	2,146
Tank	7,842	.....	6	.....	.....	230	8,078
Caboose	217	9	300	50	70	174	820
Miscellaneous or not specified	1,284	.....	666	100	1,096	142	3,288
Total	28,679	14,734	17,332	12,758	4,433	1,431	79,367

the credit of the authorities of Washington that the deliveries on these cars have been called for with full regard to both the shipping situation and to the situation in car builders' establishments.

The Russian orders for cars have not had anything like

TABLE IV—THE FREIGHT AND PASSENGER CARS BUILT IN 1917.

	Freight cars	Passenger cars
Domestic	119,363	1,969
Foreign	32,038	31
Total	151,401	2,000
All-steel	61,115	1,874
Steel frame	29,310	.....
Steel underframe	40,386	93
Steel center sills	8,317	.....
Wood	12,273	33
	151,401	2,000

COMPARISON WITH PREVIOUS YEARS

Year	Freight cars	Passenger cars
1899	119,886	1,305
1900	115,631	1,636
1901	136,950	2,055
1902	162,599	1,948
1903	153,195	2,007
1904	60,806	2,144
1905*	165,155	2,551
1906*	240,503	3,167
1907*	284,188	5,457
1908*	76,555	1,716
1909*	93,570	2,849
1910*	180,945	4,412
1911*	72,161	4,246
1912†	152,429	3,060
1913†	207,684	3,296
1914†	104,541	3,691
1915†	74,112	1,949
1916†	135,001	1,839

*Includes Canadian output.
†Includes Canadian output and equipment built in railroad shops.

the effect on the car market that the Russian locomotives orders have had. There have not been large car orders placed and there were not sufficient domestic orders to establish a conflict between deliveries on domestic and on from three to four months' delivery, which is the condition in normal times. With a plant capacity of about 25,000 cars per month and with current orders to absorb this capacity for the next three months, one-fourth of which is for foreign delivery, the car companies could, if sufficient orders were placed, organize their forces for maximum full production and provide over 100,000 cars within the next six months. This would assist materially in relieving the car shortage. They have been handicapped throughout the year by the scarcity of labor and the delayed receipt of material. Even now if a large number of cars was ordered for immediate delivery, it might be necessary for the Government to assist in the matter of materials. A shortage of material not only delays the delivery of the cars but disrupts the shop organization and greatly increases the cost of the cars. In other words, the conditions must be stabilized if the car production is to be sufficient to meet the needs of the country for new freight cars.

And this still omits from consideration the new developments at Washington, which, as noted editorially, have been received on the whole with favor in the supply field.

There were 151,401 freight cars built during the year, of which 119,363 were for domestic use and 32,038 for foreign delivery. Of the 119,363 for domestic use, 12,273, or over 10 per cent, were of wood and over 11 per cent, or 13,488, were built by the railroads themselves. The total number built is a material increase over 1916 and 1915.

In the following tables are given lists of the orders for freight and passenger cars during the twelve months of 1917. The article on the locomotive situation on another page tells how the items were obtained. Suffice it to say here that the lists are received from official sources. Replies were received from practically every railway and car line in the country, and the reports were then further checked up by reference to lists furnished by the builders.

Passenger Car Orders in 1917

Purchaser	No.	Class	Construction	Weight	Trucks, No. of wheels	Lighting	If electric lighting: Axle generator equipm't	If electric lighting: Batteries	Builder
Alabama & Vicksburg	1	Bagg. & mail	All steel	.....	6	Electric	Safety	Willard	Am. Car & Fdy.
American Traction Co	1	Stor. battery	St. underframe	28,000	4	Electric	.....	.....	Ry. Stor. Bat. Car
Atchison, Topeka & Santa Fe	2	Private	All steel	.....	6	Electric	.....	.....	Pullman
Atlanta, Birmingham & Atlantic	1	Stor. battery	St. underframe	60,000	4	Electric	.....	.....	Ry. Stor. Bat. Car
Atlantic & Carolina	1	80 hp. Gasolene, passenger and express car.				.....	.....	.....	.....
Atlantic Coast Line R. R.	2	Driving	All steel	.....	6	Electric	Stone-Franklin	Edison	Pullman
	3	Coaches	All steel	.....	6	Electric	Stone-Franklin	Edison	Pullman
	3	Pass. & bagg.	All steel	.....	6	Electric	Stone-Franklin	Edison	Pullman
	8	Mail & bagg.	All steel	.....	6	Electric	Stone-Franklin	Edison	Pullman
	18	Express	All steel	.....	6	Electric	Stone-Franklin	Edison	Pullman
Baltimore & Ohio R. R.	*†35	Express	St. underframe	43,370	4	Oil	.....	.....	Company shops

*Items marked with an asterisk in this and the following tables are not included in the totals.
†Rebuilt from box cars.

Purchaser	No.	Class	Construction	Weight	Trucks, No. of wheels	Lighting	If electric lighting: Axle generator equipm't	If electric lighting: Batteries	Builder
Boston & Maine	4	Baggage	All steel	112,000	4	Electric	U. S.	U. S.	Osgood-Bradley
	2	Mail	All steel	.....	4	Electric	.....	.....	Osgood-Bradley
*Boston Elevated Ry	35	Subway	All steel	86,000	4	Electric	.....	.....	Pressed Steel
Cambria & Indiana	1	Stor. battery	All steel	46,000	8	Electric	.....	.....	Ry. Stor. Bat. Car
Central of Georgia	7	Coaches	All steel	131,800	6	Electric	Gould	Edison	Pullman
	2	Pass. & bagg.	All steel	131,800	6	Electric	Gould	Edison	Pullman
	2	Bagg. & mail	All steel	.....	6	Electric	Gould	Edison	Pullman
	3	Baggage	All steel	110,100	6	Electric	Gould	Edison	Pullman
	2	Parlor	All steel	.....	6	Electric	Gould	Edison	Pullman
	4	Coaches	All steel	.....	..	Electric	.....	.....	Am. Car & Fdy.
	3	Pass. & bagg.	All steel	.....	..	Electric	.....	.....	Am. Car & Fdy.
	2	Express	All steel	.....	..	Electric	.....	.....	Am. Car & Fdy.
	2	Bagg. & mail	All steel	.....	..	Electric	.....	.....	Am. Car & Fdy.
Central Pacific	6	60 ft. bagg.	All steel	93,270	4	Gas	.....	.....	Am. Car & Fdy.
Central Vermont	6	Milk	St. underframe	50,400	4	Oil	.....	.....	Company shops
Chattahoochie Valley	1	Stor. battery	St. underframe	28,000	4	Electric	.....	.....	Ry. Stor. Bat. Car
Chicago & North Western	1	Private	Steel	177,500	6	Electric	.....	.....	Pullman
Chicago, Burlington & Quincy	5	Mail	All steel	130,000	6	Electric	Safety	Gould	Am. Car & Fdy.
	15	Baggage	All steel	140,000	6	Electric	.....	Gould	Am. Car & Fdy.
Chicago, Milwaukee & St. Paul	18	Baggage	Steel frame	126,200	6	Oil & electric	.....	.....	Standard Steel
Cosden, J. S.	1	Private	All steel	.....	..	Electric	.....	.....	Am. Car & Fdy.
Cuba Northern	6	1st class	.....	.....	..	.....	.....	.....	Am. Car & Fdy.
	10	2nd class	.....	.....	..	.....	.....	.....	Am. Car & Fdy.
	4	Bagg., mail & exp.	.....	.....	..	.....	.....	.....	Am. Car & Fdy.
Deer River R. R.	1	200 hp. Combination gasoline mech. drive.				.....	.....	.....	McKeen
Delaware, Lackawanna & Western	10	Express	All steel	96,000	4	Electric	Stone-Franklin	Edison	Pullman
	10	Coaches	All steel	122,000	4	Electric	Gould	Gould	Pullman
	2	Libr.-buff. & bagg.	All steel	165,000	6	Electric	Gould	Gould	Pullman
East Broad Top R. R.	4	Coach	Wood	.....	4	Electric	.....	Pyle Nat.	Company shops
	1	Smoking	Wood	.....	4	Electric	.....	Pyle Nat.	Company shops
	1	Bagg. & express	Wood	.....	4	Electric	.....	Pyle Nat.	Company shops
East Tenn. & West. North Carolina	2	Coaches	Steel frame	45,000	4	Electric	Direct from headlight		Am. Car & Fdy.
	1	Mail & bagg.	Steel frame	45,000	4	Electric	Direct from headlight		Am. Car & Fdy.
Ferrocarril del Pacifico	6	1st class	.....	.....	..	.....	.....	.....	Am. Car & Fdy.
	11	2nd class	.....	.....	..	.....	.....	.....	Am. Car & Fdy.
Galveston, Harrisburg & San Antonio	5	Driving	All steel	160,000	6	Electric	.....	.....	Am. Car & Fdy.
	3	70 ft. bagg.	All steel	120,480	6	Gas	.....	.....	Am. Car & Fdy.
Great Northern	20	Bagg. & mail	All steel	.....	6	Electric & oil	.....	.....	Am. Car & Fdy.
Great Western	2	200 hp. Combination gasoline mech. drive.				.....	.....	.....	McKeen
Harkness, Edw. S.	1	Private	All steel	.....	6	Electric	.....	.....	Pullman
Hocking Valley	1	Baggage	St. underframe	140,000	..	.....	.....	.....	Company shops
Houston & Texas Central R. R.	2	70 ft. bagg.	All steel	120,480	6	Gas	.....	.....	Am. Car & Fdy.
	2	Bagg. & mail	All steel	122,853	6	Gas	.....	.....	Am. Car & Fdy.
Illinois Central	10	Chair	All steel	132,500	6	Electric	Safety	Edison	Pullman
	25	Coaches	All steel	132,300	6	Electric	Safety	Edison	Pullman
	8	Composite	All steel	132,800	6	Electric	Safety	Edison	Pullman
	3	Pass. & bagg.	All steel	128,300	6	Electric	Safety	Edison	Pullman
	5	Bagg. & mail	All steel	124,500	6	Electric	Safety	Edison	Pullman
	10	Postal-storage	All steel	115,500	6	Electric	Safety	Edison	Pullman
	10	Baggage	All steel	124,200	6	Electric	Safety	Edison	Pullman
	25	Coaches	All steel	132,300	6	Electric	Safety	Edison	Pullman
	15	Baggage	All steel	115,500	6	Electric	Safety	Edison	Pullman
	5	Pass. & bagg.	All steel	128,300	6	Electric	Safety	Edison	Pullman
*Interborough Rapid Transit	477	Subway	All steel	.....	4	Electric	.....	.....	Pullman
Interstate Public Service Co.	1	Bagg. & exp.	All steel	.....	..	Electric	.....	.....	Am. Car & Fdy.
Louisiana & Arkansas	2	Coaches	St. underframe	95,000	6	Oil & gas	.....	.....	Barney & Smith
Louisiana Western	1	70 ft. bagg.	All steel	120,480	6	Gas	.....	.....	Am. Car & Fdy.
	2	Bagg. & mail	All steel	122,853	6	Gas	.....	.....	Am. Car & Fdy.
Louisville & Nashville	6	Bagg. & mail	All steel	135,000	6	Electric	Consolidated	Willard	Am. Car & Fdy.
	8	Coaches	All steel	140,000	6	Electric	Consolidated	Willard	Am. Car & Fdy.
	4	Chair	All steel	140,000	6	Electric	Consolidated	Willard	Am. Car & Fdy.
	3	Dining	All steel	155,000	6	Electric	Newbold	Willard	Am. Car & Fdy.
	1	Postal	All steel	125,000	6	Electric	.....	.....	Am. Car & Fdy.
	3	Horse	All steel	128,200	6	Electric	.....	.....	Am. Car & Fdy.
	4	Coach. & smoking	All steel	140,600	6	Electric	.....	.....	Am. Car & Fdy.
	4	Chair	All steel	140,800	6	Electric	.....	.....	Am. Car & Fdy.
Memphis & Rugby	1	Stor. battery	Steel	18,000	4	Electric	.....	.....	Ry. Stor. Bat. Car
Montana, Wyoming & Southern	1	200 hp. Combination gasoline mech. drive.				.....	.....	.....	McKeen
Morgans Louisiana & Texas	2	70 ft. bagg.	All steel	120,480	6	Gas	.....	.....	Am. Car & Fdy.
New York Central R. R.	18	Motor coaches	All steel	132,200	4	Electric	.....	.....	Standard Steel
New York, New Haven & Hartford	60	Coaches	All steel	123,360	4	Electric	Safety	Gould	Osgood-Bradley
	25	70 ft. baggage	All steel	122,000	4	Electric	Safety	Gould	Osgood-Bradley
	15	60 ft. baggage	All steel	112,300	4	Electric	Safety	Gould	Osgood-Bradley
New York, Ontario & Western	4	Baggage	St. underframe	86,000	4	Gasolene vap. sys.	.....	.....	Company shops
	9	Milk	Wood	42,000	4	None	.....	.....	Company shops
Oregon & California	10	60 ft. baggage	All steel	93,270	4	Gas	.....	.....	Am. Car & Fdy.
Pennsylvania Railroad	55	Bagg. & exp. (B60)	All steel	103,000	4	Electric	.....	Gould	Altoona shops
	10	Auto-exp. (B-60a)	All steel	96,000	4	Electric	.....	Gould	Altoona shops
	7	Pass. & bagg. (PB-70)	All steel	129,000	6	Electric	.....	Gould	Altoona shops
Peoria & Pekin Union	1	Baggage	Wood	85,000	4	Gas	.....	.....	Barney & Smith
	4	Coaches	Wood	95,900	4	Gas	.....	.....	Barney & Smith
Pere Marquette R. R.	2	Postal	All steel	.....	4	Electric	Gould	Gould	Am. Car & Fdy.
Philadelphia & Reading	40	Coaches	All steel	120,000	4	Electric	20 Saf. E.S.B.	20 Will. E.S.B.	Harlan & Holl.
	10	Combination	All steel	118,000	4	Electric	Franklin	Edison	Harlan & Holl.
Philadelphia, Baltimore & Washington	2	Pass. & bagg. (PB-70)	All steel	129,000	6	Electric	.....	Gould	P.R.R. Alt'na shps.
Pullman Company	389	Sleeping	All steel	.....	6	Electric	.....	.....	Pullman
	40	Parlor	All steel	.....	6	Electric	.....	.....	Pullman
	3	Private	All steel	.....	6	Electric	.....	.....	Pullman
Quebec Central	1	Bagg. & mail	Wood	79,640	4	Electric	Stone-Franklin	.....	Company shops
Richmond, Fredericksburg & Potomac	3	Coaches	All steel	140,000	6	Electric	Gould	Gould	Am. Car & Fdy.
Rouss, Peter W.	1	Private	All steel	.....	..	.....	.....	.....	Company shops
San Antonio & Aransas Pass	4	Bagg. & mail	.....	.....	6	Electric	.....	.....	Pullman
Southern Pacific	4	70 ft. bagg.	All steel	120,480	6	Gas	.....	.....	Am. Car & Fdy.
Sumpter Valley Ry.	2	Bagg. & mail	St. underframe	.....	4	Oil	.....	.....	Am. Car & Fdy.
	2	Pass. & express	St. underframe	.....	4	Oil	.....	.....	Am. Car & Fdy.
	2	Coaches	St. underframe	.....	4	Oil	.....	.....	Am. Car & Fdy.
Texas & New Orleans	2	70 ft. bagg.	All steel	120,480	6	Gas	.....	.....	Am. Car & Fdy.
	2	Bagg. & mail	All steel	122,853	6	Gas	.....	.....	Am. Car & Fdy.
Texas & Pacific	16	Coaches	All steel	.....	6	Electric	Stone-Franklin	Edison	Pullman
	5	Dining	All steel	.....	6	Electric	Stone-Franklin	Edison	Pullman
	2	Pass. & bagg.	All steel	.....	6	Electric	Stone-Franklin	Edison	Pullman
	5	Bagg. & express	All steel	.....	6	Electric	Stone-Franklin	Edison	Pullman
Union Pacific	3	200 hp. Combination gasolene mech. drive.				.....	.....	.....	McKeen
	1	300 hp. Combination gasoline mech. drive.				.....	.....	.....	McKeen
United States Government	1	200 hp. Combination gasoline mech. drive. (special).				.....	.....	.....	McKeen
	5	Miscellaneous	All steel	.....	..	Electric	.....	.....	Am. Car & Fdy.
Virginia & Truckee	1	Auto-car	St. underframe	10,000	6	Electric	.....	.....	White Co.
West Jersey & Sea Shore	11	Pass. & bagg. (PB-70)	All steel	129,000	6	Electric	.....	.....	P.R.R. Alt'na shps.
	3	Bagg. & pass. (B-60)	All steel	103,000	4	Electric	.....	.....	P.R.R. Alt'na shps.
Widener, Joseph E.	1	Private	All steel	.....	6	Electric	.....	.....	Pullman

Freight Car Orders in 1917

From Companies in the United States and Canada

Purchaser.	No.	Class.	Capacity	Construction	Weight	Draft gear	Trucks.	Roofs.	Builder
Abilene & Southern	1	Coal	80,000	St. und'frame	.....	.....	Bettendorf	.....	Company shops
Alabama & Vicksburg	1	Flat	60,000	Wood	.....	Cardwell	.....	.....	Company shops
	*3	Steel underframes and steel end frames				.....	.....	.....	Am. Car & Fdy.
Alaska Engineering Commission	20	.....	.....	.....	.....	.....	.....	.....	Seattle
Allegheny Steel Co	8	Gondola	100,000	Steel	37,000	Farlow-West'ghouse	Arch bar	.....	Ralston
Aliquippa & Southern	50	Gondola	100,000	Steel	56,080	Farlow-West'ghouse	Arch bar	.....	Pressed Steel
American Brass Co	2	Gondola	100,000	Steel	32,200	Spring	Arch bar	.....	Pressed Steel
American Linseed Co	10	Tank	10,000g.	Steel	.....	.....	.....	.....	Am. Car & Fdy.
	20	Tank	10,000g.	Steel	.....	.....	.....	.....	Am. Car & Fdy.
American Steel & Wire Co	25	Tank	100,000	Steel	42,000	Cardwell	Arch bar	.....	General Am.
	1	Scale test	.....	Steel	.....	Miner	.....	.....	Am. Car & Fdy.
Archer-Daniels Linseed Co	4	Tank	60,000	Steel	33,000	Cardwell G-11	Arch bar	.....	Company shops
Armour Car Lines	500	Refrigerator	60,000	St. und'frame	50,000	Cardwell G-11	Cast steel	Dble. board	Company shops
	50	Tank	6,000g.	Steel	40,000	Cardwell G-11	Arch bar	.....	Chicago St'l Car
	*500	Steel underframes for beef cars			.....	.....	.....	.....	Bettendorf
Atchison, Topeka & Santa Fe	800	Refrigerator	80,000	St. und'frame	55,500	Miner A-19-B	Cast steel	Murphy	Am. Car & Fdy.
	1,500	Gondola	100,000	St. frame	45,000	Miner A-19-B	Cast steel	.....	Am. Car & Fdy.
	100	Concentrate	100,000	St. frame	44,900	Miner A-12-B	Cast steel	Wood	Pullman
	30	Caboose	.....	.....	.....	.....	.....	.....	Company shops
Baltimore & Ohio	1,000	Hopper	110,000	All steel	41,500	Farlow-Sessions	Barber	.....	Cambria
	1,000	Hopper	110,000	Composite	42,500	Farlow-Sessions	Barber	.....	So. Baltimore
	100	Caboose	.....	.....	.....	.....	.....	.....	Company shops
	350	Box bodies	80,000	St. ctr. sills	36,900	.....	.....	.....	Ryan Car
Bangor & Aroostook	100	Box	60,000	St. ctr. sills	37,000	Cardwell G-11	Cast steel	Murphy	Laconia
	50	Flat	80,000	St. ctr. sills	33,000	Cardwell G-11	Cast steel	.....	Laconia
	2	Flat	60,000	St. ctr. sills	24,000	Tandem spring	Arch bar	.....	Company shops
	3	Flat	50,000	Wood	22,000	Tandem spring	Arch bar	.....	Company shops
	3	Box	60,000	Steel	34,000	Tandem spring	Arch bar	Wood	Company shops
	9	Box	50,000	Wood	28,000	Tandem spring	Arch bar	Wood	Company shops
Batesville Southwestern	40	.....	.....	.....	.....	.....	.....	.....	Company shops
Bethlehem Steel Co	50	Gondola	110,000	Steel	.....	Cardwell	.....	.....	Am. Car & Fdy.
Birmingham Southern	10	.....	.....	Steel	.....	.....	.....	.....	Company shops
	21	.....	.....	Wood	.....	.....	.....	.....	Company shops
Boston & Maine	1	Derrick self propelling		.....	.....	.....	.....	.....	Company shops
Boynton Refining Co	25	Tank	80,000	Steel	40,000	Friction	Arch bar	.....	Pressed Steel
Brier Hill Steel Co	5	Tank	8,250g.	Steel	.....	Friction	.....	.....	Penn Tank Car
	10	Flat	150,000	Steel	38,000	Farlow	Arch bar	.....	Mt. Vernon
	10	Gondola	100,000	Steel	39,975	Farlow spring	Arch bar	.....	Pressed Steel
Buffalo, Rochester & Pittsburgh	15	Caboose	60,000	St. und'frame	40,000	Farlow spring	Cast steel	Canvas	Mt. Vernon
Butler County R. R.	25	Flat	60,000	Wood	25,000	Tandem	Arch bar	.....	Company shops
Butterworth-Judson Co	75	Tank	.....	Steel	.....	.....	.....	.....	Cambria
California Dispatch Line	25	Tank	8,000g.	Steel	.....	.....	.....	.....	Penn. Tank Car
	10	Tank	8,000g.	Steel	.....	.....	.....	.....	General Am.
Calumet & Hecla Mining Co	50	Rock	80,000	Wood	.....	Miner	.....	.....	Am. Car & Fdy.
Canadian Car & Foundry Co	8	Flat	80,000	Steel frame	32,000	.....	.....	.....	Can. Car & Fdy.
Canadian Government Railways	3,000	Box	80,000	Steel frame	40,000	Miner twin spring	Arch bar	Chic. Winslow	Can. Car & Fdy.
	1,000	Box	80,000	Steel frame	40,000	Miner twin spring	Bettendorf	Chic. Winslow	Can. Car & Fdy.
	1,000	Box	80,000	Steel frame	40,000	Miner twin spring	Arch bar	Chic. Winslow	Nat. Steel Car
	1,000	Stock	60,000	Wood	39,600	Tandem spring	Arch bar	Dbl. board	Can. Car & Fdy.
	50	.....	.....	Wood	.....	.....	.....	.....	Company shops
Can. Gov. Rys. (East. Lines)	500	Box	80,000	Steel frame	40,000	Miner twin spring	Arch bar	Chic. Winslow	Can. Car & Fdy.
	500	Box	80,000	Steel frame	40,000	Cardwell friction	Arch bar	Chic. Winslow	Can. Car & Fdy.
	1,000	Box	80,000	Steel frame	40,000	Miner twin spring	Arch bar	Chic. Winslow	Eastern Car
Canadian Government Railways	500	Box	100,000	Steel frame	47,500	Miner twin spring	.....	Metal	Can. Car & Fdy.
	20	Snow plow	.....	Steel	62,500	Miner tandem	.....	.....	Can. Car & Fdy.
	200	Box	60,000	Wood	36,300	.....	.....	Wood	Can. Car & Fdy.
	100	Refrigerator	80,000	Wood	47,000	.....	.....	Wood	Can. Car & Fdy.
Canadian Pacific	1	Auto. Furn.	.....	.....	.....	.....	.....	.....	Angus shops
	76	Auto. Furn.	.....	.....	.....	.....	.....	.....	Winnipeg shops
	1	Stores supply	.....	St. und'frame	.....	Miner twin	Simplex Mystic	Canvas	Angus shops
	34	Vans	.....	.....	.....	.....	.....	.....	Winnipeg shops
	1	Snow plow	.....	Steel	.....	Miner	Simplex	Steel	Angus shops
	4	Snow plow	.....	Wood	.....	.....	.....	.....	Winnipeg shops
	2	Snow plow	Dbl. tr.	Wood	.....	.....	.....	.....	Winnipeg shops
	4	Flangers	.....	.....	.....	.....	.....	.....	Winnipeg shops
	10	Air Dump	26 ft.	.....	.....	.....	.....	.....	W. W. S. C.
	1	Stock	60,000	.....	.....	.....	.....	.....	Winnipeg shops
	1,092	Coal	94,000	St. und'frame	.....	Miner twin	Simplex	.....	Angus shops
Canadian Steel Foundries	15	Ingot	.....	Steel	.....	.....	.....	.....	Can. Car & Fdy.
	12	Flat	80,000	Steel	.....	.....	.....	.....	Can. Car & Fdy.
Cambria Steel Co	6	Flat	100,000	Steel	38,400	Slick	Arch bar	.....	Cambria
	4	Flat	100,000	Steel	39,600	Slick	Arch bar	.....	Cambria
	40	Ore bin	200,000	Steel	52,900	Slick	Arch bar	.....	Cambria
	18	Coke bin	100,000	Steel	71,400	Slick	Arch bar	.....	Cambria
	4	Gondola	100,000	Steel	54,100	Slick	Arch bar	.....	Cambria
	7	Coke	100,000	Steel	71,400	Slick	Arch bar	.....	Cambria
	6	Hopper (H21a)	140,000	Steel	57,300	Slick	Arch bar	.....	Cambria
	20	Gondola	140,000	Steel	51,400	Slick	Arch bar	.....	Cambria
	1	Quencher	.....	Steel	128,300	Westinghouse	Slick side fr.	.....	Cambria
	30	Dump	.....	Steel	58,300	Slick	Arch bar	.....	Cambria
	2	Quencher	.....	Steel	128,300	Westinghouse	Slick side fr.	.....	Cambria
	9	Hopper (H21a)	140,000	Steel	57,300	Slick	Arch bar	.....	Cambria
	40	Gondola bodies	140,000	Steel	35,200	Slick	.....	.....	Cambria
	6	Trucks	.....	.....	.....	.....	.....	.....	Cambria
	*100	Mine	.....	.....	.....	.....	.....	.....	Cambria
Carnegie Steel Co	250	Hopper	100,000	Steel	48,400	Farlow-West'ghouse	Arch bar	.....	Ralston
	20	Dump	140,000	.....	.....	Farlow-West'ghouse	.....	.....	Standard Steel
	4	Gondola	140,000	Steel	51,260	Farlow-West'ghouse	Arch bar	.....	Pressed Steel
	60	Tank	100,000	Steel	.....	Cardwell	.....	.....	Am. Car & Fdy.
	7	Dump	.....	Steel	.....	Farlow-West'ghouse	.....	.....	Clark Car
	6	Flat	.....	Steel	.....	Farlow-West'ghouse	.....	.....	Standard Steel
Central of Georgia	100	Stock	80,000	Wood	39,000	Bradford	Schoen	Wood	Company shops
	100	Stock	60,000	Wood	.....	Bradford	Arch bar	Wood	Company shops
Central of New Jersey	2	Box	60,000	St. ctr. sills	38,300	Transom	Arch bar	.....	Company shops
	2	Flat	80,000	St. ctr. sills	30,000	Transom	Arch bar	.....	Company shops
	4	Caboose	50,000	Wood	29,800	W. & P.	Arch bar	.....	Company shops
	2	Gondola	80,000	St. ctr. sills	33,200	Transom	Arch bar	.....	Company shops
Central Vermont	1	Caboose	60,000	Wood	.....	Spring	Arch bar	Wood	Company shops
Certainteed Products Corp	1	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn Tank Car
Chesapeake & Ohio	50	Caboose	80,000	Eco.dft.arms	32,500	Farlow twin spring	Arch bar	Tin	Company shops
	60	Stock	80,000	Eco.dft.arms	35,240	Tandem spring gear	Arch bar	Board	Company shops
Chicago & Alton	200	Gondola	80,000	St. ctr. sills	35,300	Miner Class G	Pressed steel	.....	Haskell & Bark.
Chicago & Calumet River	25	Gondola	100,000	Steel	40,300	.....	Arch bar	.....	Pressed Steel
Chicago & North Western	2,000	Gondola	100,000	Steel frame	41,800	Miner A-24-A	Cast steel	.....	Am. Car & Fdy.
	50	Caboose	.....	St. und'frame	.....	Miner	.....	.....	Am. Car & Fdy.
	*375	Steel underframes		.....	.....	.....	.....	.....	Am. Car & Fdy.
Chicago, Indianapolis & L'ville	*5	Steel underframes		.....	.....	.....	.....	.....	Am. Car & Fdy.

Purchaser.	No.	Class.	Capacity	Construction	Weight	Draft gear	Trucks.	Roofs.	Builder
Chicago, Burlington & Quincy...	1,500	Gondola	100,000	All steel	39,400	Farlow spring	Arch bar	.....	Pressed Steel
	125	Tank	12,500g.	Steel	45,000	Spring	Arch bar	.....	Standard Steel
	50	Way	30 ft.	St. und'frame	39,900	Spring	Built up	Wood	Company shops
	100	Stock	60,000	St. ctr. sills	33,000	Spring	Arch bar	Wood	Company shops
	200	Stock	80,000	St. ctr. sills	36,400	Spring	Arch bar	Wood	Company shops
	*150	Mine car bodies	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
Chicago Junction	4	Flat	60.000	Wood	.....	.....	Arch bar	.....	Company shops
	2	Flat	80,000	Wood	.....	.....	Arch bar	.....	Company shops
	2	Flat	80,000	St. und'frame	.....	.....	Arch bar	.....	Company shops
	1	Stock	60,000	Wood	.....	.....	Arch bar	.....	Company shops
Chicago, Milwaukee & St. Paul..	230	Cinder Dump	40,000	Wood	21,800	.....	Arch bar	.....	Company shops
	1,000	Gondola	100,000	St. ctr. sills	41,900	Miner A-18	Bettendorf	.....	Company shops
	1,500	Gondola	100,000	St. ctr. sills	41,900	Miner A-18	Bettendorf	.....	Company shops
	250	Ore	110,000	Wood	31,000	Farlow twin spring	Bettendorf	.....	Company shops
	1,000	Box	80,000	St. ctr. sills	43,000	Miner A-18	Bettendorf	.....	Company shops
	150	Flat	100,000	Steel	34,700	Miner A-18	Bettendorf	.....	Bettendorf
Chicago, St. P., Minn. & Omaha.	300	Gondola	100,000	St. und'frame	39,500	Miner A-24-A	Arch bar	.....	Hudson shops
	*300	Steel underframes for gondola cars	.....	.....	.....	.....	.....	.....	Bettendorf
Cincinnati Abbatoir Co.....	*45	Steel underframes	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
Cincinnati, Indianapolis & West.	21	Ballast	60,000	Wood	30,000	Miner spring	Arch bar	Plastic	Company shops
	1	Automobile	60,000	Wood	38,500	Miner spring	.....	.....	Company shops
Clarendon Refining Co.....	30	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn Tank Car
Clev., Cin., Chi. & St. Louis...	250	Stock	80,000	St. und'frame	40,000	Standard tandem	Bettendorf	Plastic	Merchants D. T.
Colorado & Southern.....	200	Box	80,000	St. ctr. sills	37,000	Class "G"	Arch bar	Q. & M.	Company shops
	100	Stock	80,000	St. ctr. sills	35,000	Class "G"	Arch bar	Wood	Company shops
Commonwealth Edison Co.....	1	Flat	220,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Consolidation Coal Co.....	300	Hopper	100,000	Steel	.....	Farlow sessions	Cast steel	.....	Pullman
Constantine Refining Co.....	10	Tank	.....	.....	.....	.....	.....	.....	Gen. American
Cook, N. B., Oil Co.....	2	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn Tank Car
Copper Range	50	Hopper	100,000	St. ctr. sills	33,000	Cardwell G-11	Arch bar	.....	Am. Car & Fdy.
	3	Caboose	.....	St. und'frame	36,000	Spring	Arch bar	Canvas	Company shops
	1	Ditcher Flat	100,000	St. und'frame	31,400	Spring	Arch bar	.....	Company shops
	1	Rotary snow plow	.....	Steel	208,000	A. L. Co.	Steel plate	Steel	R. L. Co.
Cornplanter Refining Co.....	20	Tank	8,000g.	Steel	41,000	Cardwell B-11	.....	.....	Std. Car Cons.
	20	Tank	8,000g.	Steel	41,000	Cardwell B-11	.....	.....	Alleghy. St. Tk.
Cosden & Co.....	200	Tank	80,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
	200	Tank	100,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Crew Levick Co.....	23	Tank	80,000	Steel	38,200	Cardwell G-11	Arch bar	.....	Am. Car & Fdy.
Cudahy Milwaukee Refrig. Line.	2	Refrigerator	60,000	St. und'frame	44,000	Farlow	Arch bar	Hutchins	Company shops
Cudahy Refrigerator Line.....	100	Refrigerator	60,000	St. ctr. sills	45,000	Cardwell	Vulcan	Wood	Company shops
Cumberland Valley	15	Cabin	.....	Steel	41,000	Farlow-West'ghouse	Arch bar	Steel	P. R. R. shops
Delaware & Hudson.....	*50	Steel underframes for caboose cars	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
Delaware River & Union.....	100	Tank	67,320	Steel	44,500	Cardwell	.....	.....	Carnegie Steel
Delray Connecting	86	Coke racks	100,000	St. und'frame	.....	Cardwell friction	.....	.....	Haskell & Bark.
Detroit Chemical Works.....	2	Tank	100,000	Steel	.....	.....	.....	.....	Gen. American
Detroit Edison Co.....	10	General service	100,000	Steel	.....	Cardwell	.....	.....	Am. Car & Fdy.
Detroit, Toledo & Ironton.....	50	Gondola	100,000	Steel	39,500	Farlow twin spring	Arch bar	.....	Pressed Steel
Dist. of Columbia, Comm. of...	6	Dump	4 yds.	Wood	.....	.....	.....	.....	Am. Car & Fdy.
Dold, Jacob, Packing Co.....	50	Refrigerator	60,000	Wood	.....	Cardwell	.....	.....	Am. Car & Fdy.
Dominion Iron & Steel Co.....	2	Trucks	150,000	.....	21,000	.....	.....	.....	Can. Car & Fdy.
Donner Steel Co.....	25	Gondola	140,000	Steel	53,900	Slick	Slick side fr.	.....	Cambria
Doty Oil Co.....	25	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Duluth & Iron Range.....	25	Box	70,000	St. und'frame	43,000	Cardwell	Cast steel	Murphy	Std. Car Cons.
	25	Flat	60,000	St. und'frame	31,400	Murray	Cast steel	.....	Western St. Car
	50	Gondola	100,000	St. und'frame	42,800	Cardwell	Cast steel	.....	Am. Car & Fdy.
	10	Refrigerator	70,000	St. und'frame	48,400	Cardwell	Cast steel	Murphy	Company shops
DuPont, E. I., de Nemours Co..	27	Flat	.....	Wood	.....	.....	.....	.....	Am. Car & Fdy.
	7	Box	.....	Wood	.....	.....	.....	.....	Am. Car & Fdy.
	679	Solv. Recovery	.....	Wood	.....	.....	.....	.....	Am. Car & Fdy.
	27	Flat	.....	Wood	.....	.....	.....	.....	Am. Car & Fdy.
	12	Flat	.....	Wood	.....	.....	.....	.....	Am. Car & Fdy.
East Broad Top.....	39	Hopper	70,000	Steel	25,200	Miner	Vulcan	.....	Company shops
Eastern Refining Co.....	20	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
East Tenn. & Western N. C....	24	Flat	50,000	Wood	22,500	.....	Arch bar	.....	Company shops
Eldorado Refining Co.....	10	Tank	10,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
	20	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Elgin, Joliet & Eastern.....	500	Side Dump	140,000	Steel	57,000	Miner A-18	Andrews	.....	Company shops
El Paso & Southwestern.....	58	Tank	8,000g.	Steel	36,000	Cardwell	Bettendorf	.....	Penn. Tank Car
Essex Terminal	50	Gondola	.....	.....	.....	.....	.....	.....	Can. Car & Fdy.
Evans Thwing Refining Co.....	30	Tank	8,000g.	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Federal Oil & Supply Co.....	3	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Co.
Fels & Co.....	4	Tank	80,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
	2	Tank	100,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Flora American Plywood Co....	20	Flat	.....	.....	.....	.....	.....	.....	Cent. L. & Car.
Florida East Coast.....	175	Fruit	60,000	St. und'frame	55,000	Miner A-24-A	Arch bar	Murphy-XLA	Mt. Vernon
	160	Flat	80,000	Wood	31,250	Miner A-24-A	Arch bar	.....	Mt. Vernon
Foster Lumber Co.....	7	Logging	.....	Wood	.....	.....	.....	.....	Am. Car & Fdy.
H. C. Frick Coke Co.....	1,500	Hopper	140,000	Steel	42,500	Farl.-W'gh'se N.A.-1	Steel side fr.	.....	Ralston
Fruit Growers' Express.....	500	Fruit	60,000	St. und'frame	50,000	Cardwell G-11	Cast steel	Dble. board	Armour C. L. S.
Galveston, Harrisburg & San Ant.	100	Oil Tank	12,500g.	Steel	45,200	.....	.....	.....	Am. Car & Fdy.
	125	Gondola	100,000	Steel	37,000	Farlow-West'ghouse	.....	.....	Ralston
General Petroleum Corp.....	4	Tank	10,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Georgia Railroad	20	.....	.....	Wood	.....	.....	.....	.....	Company shops
Gillespie, L. C., & Sons.....	10	Tank	80,000	Steel	40,000	Friction	Arch bar	.....	Gen. American
	15	Tank	100,000	Steel	43,550	Friction	Arch bar	.....	Gen. American
Glen Nina Tank Line.....	50	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Co.
Goodyear Tire & Rubber Co....	100	Hopper	140,000	Steel	52,600	Farlow-West'ghouse	Andrews	.....	Ralston
Grand Trunk	1,000	Box	80,000	Steel frame	37,500	Miner A-24-A	Arch bar	Hutchins	Am. Car & Fdy.
Granville, Joseph E.....	4	Box	.....	.....	.....	.....	.....	.....	Cent. L. & C.
Great Northern	250	Gondola	100,000	Steel	.....	Farlow	Arch bar	Dble. board	Western St. Car
Gulf Refining Company.....	100	Tank	8,000g.	Steel	42,000	Cardwell	Cast steel	.....	Std. Car Cons.
	2	.....	.....	.....	.....	.....	.....	.....	Company shops
Hagerstown & Frederick.....	4	Gondola	.....	.....	.....	.....	.....	.....	Company shops
Hamlin, Dwight E.....	5	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Hamman, T. E.....	5	Box	.....	.....	.....	.....	.....	.....	Cent. L. & C.
Heald, John H., & Co., Inc....	3	Tank	100,000	St. und'frame	45,700	G-11 Cardwell	Arch bar	.....	Std. Car Cons.
	1	Tank	100,000	St. und'frame	45,700	M-1 National	Arch bar	.....	Std. Car Cons.
Highland Glass Co.....	6	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Illinois Central	500	Auto-Furn.	80,000	Steel frame	47,750	Miner tandem	Vulcan	Hutchins	Standard Steel
	500	Refrigerator	80,000	St. und'frame	56,000	Miner tandem	Vulcan	Hutchins	Haskell & Bark.
	500	Gondolas	100,000	St. und'frame	44,400	Murray friction	Vulcan	.....	Haskell & Bark.
	500	Gondolas	100,000	St. und'frame	44,400	Murray friction	Vulcan	.....	Pullman
	250	Box	80,000	Wood	45,000	Miner tandem	Vulcan	Hutchins	Burnside shops
	250	Stock	80,000	Wood	41,000	Miner tandem	Vulcan	Wood	McComb shops
	50	Caboose	60,000	St. und'frame	41,000	Miner tandem	Bettendorf	Wood	Burnside shops
	25	Caboose	60,000	St. und'frame	41,000	Miner tandem	Bettendorf	Wood	Burnside shops
	*50	Steel underframes for caboose cars	.....	.....	.....	.....	.....	.....	Bettendorf
Illinois Northern	2	Gondolas	80,000	Wood	.....	.....	.....	.....	Am. Car & Fdy.
	8	Gondola	100,000	Wood	.....	.....	.....	.....	Am. Car & Fdy.
Illinois Steel Co.....	40	Tank	100,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Independent Oil Co.....	8	Tank	8,250g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Independent Refining Co.....	10	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Indiahoma Refining Co.....	25	Tank	100,000	Steel	40,400	Cardwell G-11	Cast steel	.....	Std. Car Cons.

Purchaser.	No.	Class.	Capacity	Construction	Weight	Draft gear	Trucks.	Roofs.	Builder
Indian Refining Co., Inc.....	60	Tank	8,050g.	Steel	31,300	Cardwell G-11	Side frame	.....	Std. Car Cons.
	15	Tank	6,050g.	Steel	36,600	Cardwell G-11	Side frame	.....	Std. Car Cons.
	9	Tank	6,000g.	Steel	30,900	Bradford	Arch bar	.....	Chic. Steel Car
	25	Tank	8,050g.	Steel	41,200	Cardwell G-11	Side frame	.....	Std. Car Cons.
Inland Steel Co.....	72	General Service	100,000	Steel	41,000	Spring	Bettendorf	.....	Bettendorf
	35	Hopper	100,000	Steel	49,500	Spring	Bettendorf	.....	Bettendorf
International Refining Co.....	50	Tank	80,000	Steel	.....	.....	Cast steel	.....	Gen. American
	50	Tank	100,000	Steel	.....	National	Cast steel	.....	Std. Car Cons.
Interstate R. R.....	500	Hopper	100,000	Steel	38,530	Farlow twin spring	Arch bar	.....	Pressed Steel
Interstate Tank Car Corp.....	40	Tank	8,000g.	Steel	40,000	Cardwell friction	Arch bar	.....	Chic. Steel Car
Island Petroleum Co.....	15	Tank	80,000	Steel	35,000	.....	Arch bar	.....	Am. Car & Fdy.
Keith Railway Equipment Co...	28	Tank	100,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Kentucky Solvay Coke Co.....	9	Hopper	50,000	Steel	.....	.....	.....	.....	.....
Kingan Refrigerator Line.....	3	Hopper	100,000	Steel	39,600	Cardwell	Bettendorf	.....	Am. Car & Fdy.
Koppers, H., Co.....	1	Acid tank	100,000	Steel	.....	Cardwell	.....	.....	Am. Car & Fdy.
La Belle Iron Works.....	3	Tank	100,000	Steel	.....	Miner	.....	.....	Am. Car & Fdy.
Lackawanna Steel Co.....	8	Tank	10,000g.	Steel	44,000	Cardwell	Arch bar	.....	Gen. American
	300	Hopper	100,000	Steel	37,000	Miner A-18	Arch bar	.....	Am. Car & Fdy.
Lake Milling, Smelt. & Ref. Co..	3	Hopper	100,000	Steel	34,470	Spring	Arch bar	.....	Western Steel
Lake Park Refining Co.....	10	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Lake Terminal	12	Hopper bodies	100,000	Steel	20,335	Miner-G	.....	.....	Pressed Steel
Lehigh Valley	183	Automobile	80,000	St. und'frame	44,800	Farlow	Cast steel	Inside roof	Standard Steel
Liberty Oil Co.....	10	Tank	10,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Lorain Steel Co.....	25	Gondola	100,000	Steel	37,500	Farlow-West'ghouse	Arch bar	.....	Ralston
Los Angeles & Salt Lake.....	6	Caboose	.....	Wood	35,250	Miner	.....	.....	Mt. Vernon
Louisiana & Arkansas.....	10	Box	.....	Wood	.....	.....	.....	.....	Company shops
	2	Flat	.....	Wood	.....	.....	.....	.....	Company shops
Louisiana & Northwest.....	5	.....	.....	.....	.....	.....	.....	.....	Company shops
Louisiana Western	100	Tank	12,500g.	Steel	45,200	.....	.....	.....	Am. Car & Fdy.
Louisville & Nashville.....	500	Vent. Box	80,000	St. und'frame	40,800	Farlow	Bettendorf	Murphy	Company shops
	200	Box	80,000	St. und'frame	38,300	Farlow	Bettendorf	Murphy	Company shops
	200	Stock	80,000	St. und'frame	41,000	Farlow	.....	.....	Company shops
	100	Refrigerator	80,000	St. und'frame	50,200	Farlow	Bettendorf	.....	Company shops
	300	Gondola	100,000	St. und'frame	40,800	Farlow	Cast steel	.....	Company shops
	50	Caboose	100,000	St. und'frame	35,000	Farlow	Arch bar	Tin	Company shops
	*200	Steel underframes for box cars			.....	.....	.....	.....	Bettendorf
	*500	Steel underframes for ventilator cars			.....	.....	.....	.....	Bettendorf
	*200	Steel underframes for stock cars			.....	.....	.....	.....	Bettendorf
	*100	Steel underframes for refrigerator cars			.....	.....	.....	.....	Bettendorf
	*300	Steel underframes for gondola cars			.....	.....	.....	.....	Western Steel
Louisville Gas & Electric Co....	25	Hopper	100,000	Steel	.....	Friction	Cast steel	.....	Pullman
M. E. Ry & Light Co.....	2	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Magnolia Petroleum Co.....	10	Tank	80,000	Steel	.....	.....	.....	.....	Gen. American
Maine Central	300	Box	80,000	St. und'frame	42,545	Miner A-18	Arch bar	Chicago	Keith
	200	Stock	80,000	St. und'frame	39,000	Miner A-18	Arch bar	Wood	Keith
	30	Refrigerator	70,000	St. und'frame	49,500	Miner A-18	Andrews	Wood	Keith
	20	Refrigerator	70,000	St. und'frame	49,500	Miner A-18	Andrews	Lehon	Keith
	50	Hopper	100,000	Steel	.....	Miner A-18	Arch bar	.....	Standard Steel
Mark Manufacturing Co.....	12	Hopper	100,000	Steel	38,530	Farlow spring	Arch bar	.....	Pressed Steel
	4	Flat	100,000	St. und'frame	35,500	Friction	Bettendorf	.....	Bettendorf
	18	Gondola	140,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Marsh Refrigerator Service Co..	2	Refrigerator	60,000	St. und'frame	40,000	Farlow	Bettendorf	.....	Company shops
Meridian & Memphis.....	5	Flat	.....	Wood	.....	.....	.....	.....	Company shops
Mexican Petroleum Corp.....	75	Tank	10,000g.	Steel	40,000	Cardwell G-11	Arch bar	.....	Gen. American
Michigan Alkali Co.....	50	Hopper	100,000	Steel	38,530	Spring	Arch bar	.....	Pressed Steel
Mid-Co. Gasoline Co.....	100	Tank	10,050g.	Steel	40,000	.....	.....	.....	Penn. Tank Car
Mississippi Riv. & Bonne Terre..	1	Caboose	60,000	St. und'frame	.....	Miner	Arch bar	.....	Am. Car & Fdy.
Missouri Pacific	500	Box	.....	.....	.....	.....	.....	.....	Company shops
Moncton & Buctouche.....	1	Snow plow	.....	Wood	.....	.....	.....	.....	Can. Car & Fdy.
Monongahela Connecting R. R...	100	Gondola	200,000	Steel	.....	Westinghouse	Arch bar	.....	Jones & Laugh.
	50	Gondola	240,000	Steel	.....	Miner A-18	Arch bar	.....	Jones & Laugh.
	50	Hopper	200,000	Steel	.....	Westinghouse	Arch bar	.....	Jones & Laugh.
	50	Coke	100,000	Steel	.....	Westinghouse	Arch bar	.....	Jones & Laugh.
	10	Flat	200,000	Steel	.....	Westinghouse	Arch bar	.....	Jones & Laugh.
Monongahela Valley Traction...	4	Tank	8,250g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Montana, Wyoming & Southern..	25	Gondola	80,000	St. und'frame	.....	Miner A-18	Arch bar	.....	Mt. Vernon
Morgan's Louisiana & Texas....	100	Tank	12,500g.	Steel	45,200	.....	.....	.....	Am. Car & Fdy.
	1	Gondola	100,000	Steel	37,000	Farlow spring	.....	.....	Ralston
Morris & Co., Refrig. Line.....	400	Refrigerator	60,000	Steel frame	.....	Cardwell G-11	Vulcan	Wood	Haskell & Bark.
	20	Tank	80,000	Steel	.....	Cardwell G-11	Arch bar	.....	Am. Car & Fdy.
Munising, Marquette & S. E....	65	Flat	.....	.....	.....	.....	.....	.....	Company shops
Muskogee Refining Co.....	25	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Mutual Refining Co.....	5	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
	5	Tank	80,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
National Refining Co.....	20	Tank	80,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
	40	Tank	100,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Nevada County Narrow Gauge..	4	.....	.....	Wood	.....	.....	.....	.....	Company shops
New Orleans, Texas & Mexico..	300	Box	80,000	St. und'frame	39,700	.....	.....	Murphy-XLA	Am. Car & Fdy.
	200	Gondola	80,000	St. und'frame	36,100	.....	.....	.....	Am. Car & Fdy.
	6	.....	.....	Steel	.....	.....	.....	.....	Company shops
	4	.....	.....	St. und'frame	.....	.....	.....	.....	Company shops
	13	.....	.....	Wood	.....	.....	.....	.....	Company shops
New York Central.....	*250	Steel underframes for refrigerator cars			.....	.....	.....	.....	Bettendorf
New York, New Haven & Hart..	50	Refrigerator	80,000	St. und'frame	55,000	Miner A-18	Vulcan	Winslow	Keith
New York, Ontario & Western..	11	Flat	60,000	Wood	25,000	Miner	Arch bar	.....	Company shops
	1	Refrigerator	60,000	Wood	36,500	Miner	Fox	.....	Company shops
	1	Gondola	60,000	Wood	27,000	Miner	Pressed steel	.....	Company shops
	9	Caboose	.....	Steel frame	35,000	Farlow twin spring	Cast steel	Canvas	Company shops
Norfolk Southern	250	Box bodies	80,000	St. ctr. sills	42,000	Farlow spring	Arch bar	Winslow	Mt. Vernon
	250	Box bodies	.....	Steel	.....	Farlow spring	.....	.....	Am. Car & Fdy.
Northern Pacific	1,000	Box	80,000	St. ctr. sills	38,600	Spring	Bettendorf	Metal	Company shops
	500	Gondola	100,000	Steel	42,000	Spring & friction	Arch bar	.....	West. Steel
	500	Refrigerator	70,000	St. und'frame	55,400	Spring	Bettendorf	Wood	Pullman
Northwestern Iron Co.....	6	Coke	100,000	Steel	48,740	Spring	Arch bar	.....	Pressed Steel
Ohio Valley Refining Co.....	15	Tank	8,000g.	Steel	.....	Cardwell	.....	.....	Penn. Tank Car
Oklahoma Petroleum & Gas. Co..	100	Tank	10,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Oneta Refining Co.....	6	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Oreana Grain Co.....	1	Box	.....	.....	.....	.....	.....	.....	Cen. L & Car.
Pacific Fruit Express.....	900	Refrigerator	60,000	St. und'frame	51,000	Miner Class G	Bettendorf	Plastic	Company shops
	1,800	Refrigerator	60,000	St. und'frame	51,000	Miner Class G	Bettendorf	Plastic	Am. Car & Fdy.
Peerless Transit Line.....	60	Tank	.....	Steel	.....	.....	.....	.....	Gen. American
Pennsylvania Railroad	3,000	Box (X-25)	100,000	Steel	49,100	Farlow-West'ghouse	P.R.R. side fr.	P.R.R. Steel	Altoona shops
	940	Hopper (H21a)	140,000	Steel	49,500	Farlow-West'ghouse	P.R.R. side fr.	.....	Altoona shops
	191	Cabin (N-5)	.....	Steel	38,000	Farlow-West-ghouse	Arch bar	P.R.R. Steel	Altoona shops
	76	Work Flat (F-21)	100,000	St. und'frame	41,300	Farlow-West'ghouse	Arch bar	.....	Altoona shops
	25	Flat (F-25)	140,000	Steel	57,600	Farlow-West'ghouse	P.R.R. side fr.	.....	Altoona shops
	9	Work Equip. (F24)	80,000	St. und'frame	38,600	Farlow-West'ghouse	Arch bar	.....	Altoona shops
	3	Work Flat (F21b)	100,000	St. und'frame	41,800	Farlow-West'ghouse	Arch bar	.....	Altoona shops
Penn. American Ref. Co.....	2	Tank	8,000g.	Steel	.....	Westinghouse	Monarch	.....	Company shops
Pennsylvania Tank Line.....	400	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
	200	Tank	10,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
	4	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Pere Marquette	750	Automobile	80,000	St. ctr. sills	44,300	Murray	Bettendorf	Hutchins	Haskell & Bark.
	250	Automobile	80,000	St. ctr. sills	44,300	Cardwell	Bettendorf	Hutchins	Haskell & Bark.

Purchaser.	No.	Class.	Capacity	Construction	Weight	Draft gear	Trucks.	Roofs.	Builder
Peytona Lumber Co.....	3	Logging	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
Philadelphia & Reading.....	500	Gondola	100,000	St. und'frame	45,600	Farlow twin spring	Cast steel	.....	Pressed Steel
	500	Gondola	100,000	St. und'frame	45,600	Farlow twin spring	.....	.....	Standard Steel
	500	Box	85,000	St. und'frame	46,900	Miner tandem spring	Arch bar	Murphy	Pullman
	500	Box	85,000	St. und'frame	46,900	Miner tandem spring	Arch bar	Murphy	Am. Car & Fdy.
	20	4-wh. Caboose	.....	St. und'frame	23,940	P. & R. twin spring	.....	.....	Company shops
	3	Well	220,000	St. und'frame	102,000	Miner No. 18	Cast steel	.....	Company shops
Philadelphia, Balt. & Wash.....	40	Hopp.(H21a) Gon.	140,000	Steel	49,500	Farlow-West'ghouse	P.R.R. side fr.	.....	PRR Alt. shops
	9	Cabin (N-5)	.....	Steel	38,000	Farlow-West'ghouse	Arch bar	P.R.R. Steel	PRR Alt. shops
	8	Work Flat (F21)	100,000	St. und'frame	41,300	Farlow-West'ghouse	Arch bar	.....	PRR Alt. shops
	2	Work Flat (F21b)	100,000	St. und'frame	41,800	Farlow-West'ghouse	Arch bar	.....	PRR Alt. shops
	1	Work (F24)	80,000	St. und'frame	38,600	Farlow-West'ghouse	Arch bar	.....	PRR Alt. shops
Philippine Vegetable Oil Co.....	100	Tank	8,000g.	Steel	.....	Miner	.....	.....	Am. Car & Fdy.
Phillips Sheet & Tin Plate Co..	20	Gondola	100,000	Steel	39,975	Farlow spring	Arch bar	.....	Pressed Steel
	30	Gondola	100,000	Steel	39,975	Spring	Arch bar	.....	Pressed Steel
Pierce Oil Corp.....	25	Tank	8,000g.	Steel	.....	.....	.....	.....	Gen. American
	75	Tank	8,000g.	Steel	.....	.....	.....	.....	Am. Car & Fdy.
	125	Tank	10,000g.	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Pitts., Alleg. & McKees Rocks..	50	Hopper	110,000	Steel	44,080	Friction	Cast steel	.....	Pressed Steel
Power Gasoline Co.....	1	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Proctor & Gamble Trans. Co....	220	Tank	.....	.....	.....	.....	.....	.....	.....
	15	Box	.....	.....	.....	.....	.....	.....	.....
	100	Tank	8,050g.	Steel	.....	.....	.....	.....	Penn. Tank Car
	60	Tank	100,000	Steel	.....	Miner	.....	.....	Am. Car & Fdy.
	100	Tank	80,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Publicker Ward Distg. Co.....	1	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Quebec Central	100	Wood racks	60,000	St. ctr. sills	28,000	Miner tandem	Arch bar	.....	Internat. Car
Raymond Log Loader Co.....	1	Flat	60,000	Wood	.....	Farlow	Bettendorf	.....	Marsh Refrig.
Reid Newfoundland Co.....	50	Box	40,000	.....	.....	.....	.....	Wood	Can. Car & Fdy.
	50	Trucks	40,000	.....	.....	.....	.....	.....	Can. Car & Fdy.
Republic Iron & Steel Co.....	3	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
	2	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Rich., Fred'ksb'g & Potomac....	200	Box	80,000	Steel frame	38,000	Farlow-Ses.	Bettendorf	Murphy	Pressed Steel
	18	Flat	80,000	Steel	30,000	Farlow twin spring	Arch bar	.....	Company shops
Roessler & Hasslacher.....	4	Tank	8,250g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Roma Wine Co.....	4	Tank	10,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Saint Clair Terminal.....	30	Dump	100,000	Steel	48,500	Westinghouse D-3	Arch bar	.....	Greenville
St. Louis, Brownsville, & Mex..	15	.....	.....	Wood	.....	.....	.....	.....	Company shops
St. Louis, City of.....	1	Dump	100,000	St. und'frame	.....	Miner	.....	.....	Am. Car & Fdy.
St. Louis County Gas Co.....	8	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
St. Louis Southwestern.....	125	Box	80,000	St. und'frame	39,300	Cardwell friction	Andrews	Murphy	Mt. Vernon
	34	Box	60,000	Wood	33,500	Miner tandem	Andrews	Murphy	Company shops
Scullin Steel Co.....	10	Dump	80,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Seaboard Air Line.....	200	Stock	60,000	Wood	25,000	Miner-tandem	Bettendorf	Murphy	West. Street
Semet-Solvay Co.....	20	Gondola	100,000	Steel	.....	Cardwell G-11	Arch bar	.....	Pressed Steel
	75	Tank	100,000	Steel	45,500	Cardwell G-11	Arch bar	.....	Gen. American
	14	Gondola	100,000	St. und'frame	.....	Cardwell G-11	Arch bar	.....	Haskell & Bark.
Seneca Oil Works.....	5	Tank	80,000	Steel	39,500	Friction	Arch bar	.....	Std. Car Cons.
	5	Tank	100,000	Steel	41,500	.....	Arch bar	.....	Gen. American
Shell Co.	50	Tank	60,000	Steel	.....	.....	.....	.....	Gen. American
Shippers' Car Line.....	1	Tank	80,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Sinclair Oil & Refining Co.....	500	Tank	60,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Snyder, C. U., & Co.....	50	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
	25	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
	100	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Sondheimer, E., Co.....	6	Flat	60,000	St. und'frame	.....	Miner	.....	.....	Am. Car & Fdy.
Southern Iron & Equip. Co.....	2	Gondola	80,000	Wood	.....	.....	.....	.....	Am. Car & Fdy.
	1	Flat	80,000	Wood	.....	.....	.....	.....	Am. Car & Fdy.
Southern Pacific	100	Tank	12,500g	Steel	45,200	.....	.....	.....	Am. Car & Fdy.
	200	Tank	12,500g	Steel	44,200	Cardwell	Vulcan	.....	Ralston
Southern Pacific—Pac. System..	1,000	Box	80,000	W.-S. dft. sls.	42,100	Miner tandem	Vulcan	Chic. Cleve.	Company shops
	300	Box	80,000	W.-S. dft. sls.	42,100	Miner tandem	Vulcan	Chic. Cleve.	Pac. Car & Fdy.
	200	Box	80,000	W.-S. dft. sls.	42,100	Miner tandem	Vulcan	Chic. Cleve.	Pac. Elec. shops
	85	Flat	100,000	W.-S. dft. sls.	32,800	Miner tandem	Arch bar	.....	Company shops
	85	Flat	80,000	W.-S. dft. sls.	32,000	Miner tandem	Arch bar	.....	Company shops
	330	Flat	80,000	W.-S. dft. sls.	32,000	Miner tandem	Vulcan	.....	Company shops
	200	Gondola	80,000	W.-S. dft. sls.	36,100	Miner tandem	Vulcan	.....	Company shops
	450	Stock	80,000	W.-S. dft. sls.	36,000	Miner tandem	Vulcan	Wood	Company shops
	500	Auto.	80,000	W.-S. dft. sls.	44,000	Miner tandem	Vulcan	Hutchins	Company shops
	50	Caboose	.....	St. und'frame	36,000	Miner tandem	Arch bar	Wood	Company shops
	12	Logging	60,000	Wood	24,000	Miner tandem	Arch bar	.....	Company shops
	40	N. gage flat	40,000	Wood	13,000	Miner tandem	Arch bar	.....	Company shops
Southern Pacific (Tex. & La.)..	750	Box	80,000	St. ctr. sills	46,000	Miner tandem	Vulcan	Chic. Cleve.	Company shops
	250	Stock	80,000	St. ctr. sills	39,000	Miner tandem	Vulcan	Wood	Company shops
	200	Flat	80,000	St. ctr. sills	33,000	Miner tandem	Vulcan	.....	Company shops
	250	Automobile	80,000	St. ctr. sills	46,000	Miner tandem	Vulcan	Chic. Cleve.	Company shops
	15	Cabooses	60,000	Wood	32,500	Miner tandem	Arch bar	Wood	Company shops
Southern Railway	1,000	Box	60,000	St. ctr. sills	39,000	Farlow spring	Arch bar	Wood	Lenoir
	495	Refrigerator	80,000	St. und'frame	48,000	Miner	Arch bar	Dble. board	Lenoir
	5	Refrigerator	80,000	St. und'frame	57,200	.....	Commonwealth	Dble. board	Lenoir
Standard Oil Co. of Ind.....	50	Gondola	.....	.....	.....	.....	.....	.....	Standard Steel
Sumpter Valley	30	Truck	.....	.....	.....	.....	.....	.....	Company shops
	16	.....	.....	Wood	.....	.....	.....	.....	Company shops
Sun Co.	100	Tank	10,000g	Steel	54,100	Cardwell G-11	Arch bar	.....	Cambria
Superior Oil Works.....	5	Tank	80,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
Swift Refrigerator Transp. Co...	5	Tank	100,000	Steel	42,000	Cardwell	Cast steel	.....	Standard Steel
	50	.....	.....	Steel	.....	.....	.....	.....	Company shops
	595	.....	.....	St. und'frame	.....	.....	.....	.....	Company shops
	9	.....	.....	Wood	.....	.....	.....	.....	Company shops
Temiskaming & North. Ontario..	100	Box	80,000	Steel frame	37,500	Cardwell	Arch bar	Winslow	Can. Car & Fdy.
Texas Company	300	Tank	80,000	Steel	39,000	Cardwell G-11	Bettendorf	.....	Penn. Tank Car
Texas & Pacific.....	1	Coal	80,000	St. und'frame	37,300	Miner tandem	Arch bar	.....	Company shops
	1	Coal	80,000	St. und'frame	34,800	Miner tandem	Arch bar	.....	Company shops
	1	Tank	80,000	St. und'frame	.....	Miner tandem	Arch bar	.....	Company shops
	1	Tank	80,000	St. und'frame	34,300	Cardwell	Arch bar	.....	Company shops
Toronto, Hamilton & Buffalo...	5	Caboose	.....	St. und'frame	.....	Miner	.....	.....	Am. Car & Fdy.
Union R. R.....	1,500	Gondola	100,000	Steel	36,500	Farlow	Arch bar	Wood	Greenville
	557	Dump	100,000	Steel	48,500	Farlow	Arch bar	.....	Greenville
	20	Dump	100,000	Steel	58,500	Farlow	Arch bar	.....	Cambria
	250	Hopper	100,000	Steel	48,740	Friction	Arch bar	.....	Pressed Steel
	7	Hopper	100,000	Steel	38,530	Spring	Arch bar	.....	Pressed Steel
Union Carbide Co.....	2,000	Hopper (H21a)	140,000	Steel	50,800	Farlow slick	Slick side fr.	.....	Cambria
Union Coal & Coke Co.....	9	Tank	7,100g	Steel	42,800	Cardwell G-11	Arch bar	.....	Gen. American
Union Pacific	25	Caboose	.....	St. und'frame	35,250	Miner tandem spring	Vulcan	.....	Mt. Vernon
	1,000	Stock	80,000	St. und'frame	.....	.....	.....	.....	Am. Car & Fdy.
	1,000	Hopper	100,000	Steel	.....	Spring	Cast steel	.....	Pullman
	500	Flat	100,000	Steel	33,000	Friction	Bettendorf	.....	Bettendorf
	1,000	Gondola	100,000	Steel	41,100	Cardwell G-18	Cast side fr.	.....	Cambria
	50	Caboose	.....	Wood	.....	.....	.....	.....	Am. Car & Fdy.
	*83	Steel underframes for caboose cars			.....	.....	.....	.....	Bettendorf
	7	Snow plows	.....	.....	.....	.....	.....	.....	Company shops
	2	Tool	.....	St. und'frame	.....	.....	.....	.....	Company shops
	1	Gas	.....	St. und'frame	.....	.....	.....	.....	Company shops
Union Petroleum Co.....	25	Tank	80,000	Steel	.....	Cardwell	.....	.....	Am. Car & Fdy.

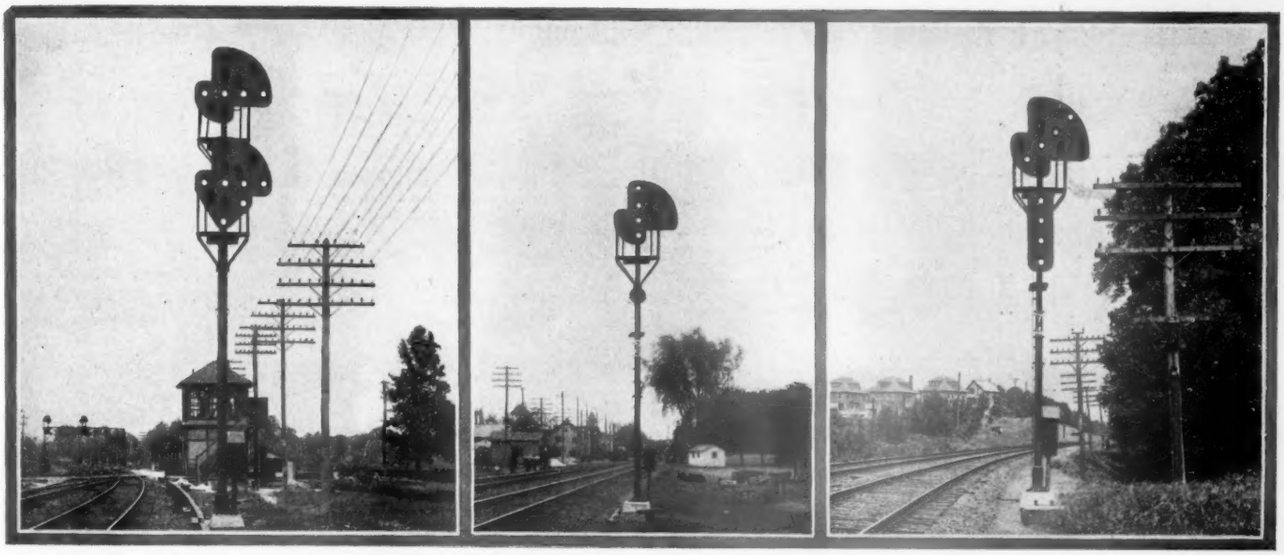
Purchaser.	No.	Class.	Capacity	Construction	Weight	Draft gear	Trucks.	Roofs.	Builder
Union Tank Line Co.....	200	Tank	8,000g	Steel	42,000	Cardwell	Arch bar	.....	Std. Car Cons.
	1,000	Tank	10,000g	Steel	55,000	Cardwell	Arch bar	.....	Am. Car & Fdy.
	1,000	Tank	10,000g	Steel	55,000	Cardwell	Arch bar	.....	Standard Steel
United Alloy Steel Corp.....	4	Flat	100,000	Steel	.....	Cardwell	.....	.....	Am. Car & Fdy.
	8	Gondola	100,000	Steel	.....	Cardwell	.....	.....	Am. Car & Fdy.
U. S. Industrial Alcohol Co....	100	Tank	8,050g	Steel	.....	Friction	.....	.....	Penn. Tank Car
United Verde Mining Co.....	32	Ore	60,000	Steel	26,500	.....	Cast steel	.....	Mt. Vernon
	2	Flat	60,000	St. und'frame	21,400	.....	Cast steel	.....	Mt. Vernon
	4	Hopper	120,000	Steel	39,600	Cardwell	Arch bar	.....	Mt. Vernon
Verde Tunnel & Smelt R. R....	3	Flat	100,000	Steel	38,500	Friction	Arch bar	.....	Pressed Steel
Vicksburg, Shreveport & Pac...	1	Coal	60,000	Wood	.....	Cardwell	.....	.....	Company shops
Virginia-Carolina	8	Flat	80,000	Wood	.....	Miner	.....	.....	Cen. Loco & C.
Virginian	1,000	Hopper	110,000	Steel	44,600	Farlow-West'ghouse	Vulcan	.....	Pressed Steel
Waynesburg & Washington.....	7	Box	60,000	Wood	.....	.....	.....	.....	Company shops
West Jersey & Sea Shore.....	20	Hopper (H21a)	140,000	Steel	49,500	Farlow-West'ghouse	P.R.R. side fr.	.....	PRR Ft. Wayne
	3	Work (F-24)	100,000	St. und'frame	38,600	Farlow-West'ghouse	Arch bar	.....	PRR Alt. shops
	2	Cabin (N-5)	.....	Steel	38,000	Farlow-West'ghouse	Arch bar	P.R.R. Steel	PRR Alt. shops
Western Maryland	10	Caboose	.....	.....	.....	.....	.....	.....	Company shops
Western Pacific	1,500	Box	80,000	St. und'frame	39,000	Farlow twin	Arch bar	Murphy	Mt. Vernon
	400	General ser.	100,000	Steel frame	42,235	Farlow spring	Arch bar	.....	Pressed Steel
W. Virginia Pulp & Paper Co...	50	Tank	100,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
White Eagle Petroleum Co.....	25	Tank	8,050g.	Steel	.....	Friction	.....	.....	Penn. Tank Car
Wilderness Lumber Co.....	2	Flat	40,000	Iron wk. only	.....	.....	.....	.....	Am. Car & Fdy.
	10	Logging	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
Williams, J. H.....	1	Flat	60,000	Wood	.....	.....	.....	.....	Am. Car & Fdy.
Wilson Car Lines.....	200	Refrigerator	60,000	Wood	49,000	Friction	Vulcan	Wood	Haskell & Bark.
	50	Tank	80,000	Steel	42,000	Friction	Arch bar	.....	Gen. American
Worth Brothers Co.....	3	Billet	.....	Steel	54,100	Slick	Slick side fr.	.....	Cambria
Youngstown Sheet & Tube Co...	80	Gondola	100,000	Steel	39,975	Farlow spring	Arch bar	.....	Pressed Steel
	20	Hopper	100,000	Steel	39,975	Farlow spring	Arch bar	.....	Pressed Steel
United States Navy.....	2	Box	80,000	St. und'frame	41,900	Farlow	Arch bar	Queenan Murphy	Mt. Vernon
	3	Box	40,000	Wood	28,400	.....	Arch bar	Wood	Mt. Vernon
	1	Hopper	100,000	Steel	37,800	.....	Arch bar	.....	Mt. Vernon
	2	Flat	150,000	Steel	35,000	Farlow	Arch bar	.....	Mt. Vernon
	2	Flat	150,000	Steel	31,300	.....	Arch bar	.....	Mt. Vernon
	5	Flat	100,000	St. und'frame	30,400	.....	Arch bar	.....	Mt. Vernon
	2	Flat	100,000	Steel	34,900	Friction	Bettendorf	.....	Bettendorf
	6	Flat	100,000	Steel	32,000	European	Bettendorf	.....	Bettendorf
	10	Flat	80,000	Steel	30,900	Twin spring	Bettendorf	.....	Bettendorf
	71	Flat	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
	37	Box	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
	11	Flat	100,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
	2	Box	60,000	.....	.....	.....	.....	.....	Am. Car & Fdy.
	5	Box	100,000	St. und'frame	.....	.....	.....	.....	Am. Car & Fdy.
	3	Flat	.....	.....	.....	.....	.....	.....	Cent. Loco. & C.
	4	Box	100,000	.....	.....	.....	.....	.....	Am. Car & Fdy.
	10	Gondola	80,000	.....	.....	.....	.....	.....	Am. Car & Fdy.
	4	General ser.	100,000	Steel	39,515	Spring	Arch bar	.....	Pressed Steel

For the American Railways in France

U. S. Government, War Dept...	2,000	Box	66,000	St. und'frame	33,500	French	American	French	Am. Car & Fdy.
(For France)	1,200	Box	66,000	St. und'frame	33,500	French	American	French	Standard Steel
	1,850	Box	66,000	St. und'frame	33,500	French	American	French	Pullman
	450	Box	66,000	St. und'frame	33,500	French	American	French	Mt. Vernon
	400	Box	66,000	St. und'frame	33,500	French	American	French	Cent. Loco.
	400	Box	66,000	St. und'frame	33,500	French	American	French	St. Louis
	575	Tank	66,000	St. und'frame	33,850	French	American	.....	Am. Car & Fdy.
	125	Tank	6,500g.	Steel	33,850	French	American	.....	Gen. American
	1,400	Flat	6,500g.	Steel	26,500	French	American	.....	Haskell & Bark.
	500	Flat	66,000	St. und'frame	26,500	French	American	.....	Southern
	700	Refrigerator	66,000	St. und'frame	47,250	French	American	French	Haskell & Bark.
	2,100	H. S. gondola	66,000	St. und'frame	32,550	French	American	.....	Standard Steel
	2,300	L. S. gondola	66,000	St. und'frame	29,100	French	American	.....	Pressed Steel
	500	L. S. gondola	66,000	St. und'frame	29,100	French	American	.....	Cambria
	500	Ballast	66,000	St. und'frame	32,250	French	American	.....	Am. Car & Fdy.
	150	Dump	6 cu. yd.	St. un'f'me	13,000	French	American	.....	West. Whld. Sc.
	150	Dump	12 cu. yd.	St. un'f'me	29,500	French	American	.....	West. Whld. Sc.
	666	Box	22,000	St. und'frame	11,250	French	American	French	Standard Steel
	166	Tank	2,000g	Steel	12,250	French	American	.....	Am. Car & Fdy.
	500	Flat	22,000	St. und'frame	8,700	French	American	.....	Pressed Steel
	165	L. S. gondola	22,000	St. und'frame	9,200	French	American	.....	Standard Steel
	700	L. S. gondola	22,000	St. und'frame	9,200	French	American	.....	Am. Car & Fdy.
	400	L. S. gondola	22,000	St. und'frame	9,200	French	American	.....	Ralston
	400	L. S. gondola	22,000	St. und'frame	9,200	French	American	.....	Magor
	333	Dump	27 cu. ft.	Steel	1,094	French	American	.....	Kilborne & Jac.
	100	Dump	27 cu. ft.	Steel	1,980	French	American	.....	West. Whld. Sc.
	100	Trucks	11,000	Steel	4,000	French	American	.....	Pressed Steel
	1	Gun	.....	.....	.....	.....	.....	.....	Magor
	12	Armored	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
	1	Spreader	.....	.....	.....	.....	.....	.....	Cent. Loco. & C.
	65	Gun	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.

Orders from Railways in Other Countries

Chilean State Rys.....	100	Box	50,000	Composite	.....	Spring	Cast steel	Steel	Pullman
Colombian National	20	Box			.....	.....	.....	.....	Am. Car & Fdy.
	10	Stock	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
	10	Gondola	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
	10	Flat	.....	.....	.....	.....	.....	.....	Am. Car & Fdy.
Co. Roy. Asturienne des Mines..	120	Gondola	20M tons	Steel	22,060	European	.....	.....	Pressed Steel
Cuba Distilling Co.....	100	Tank	.....	.....	.....	Farlow	.....	.....	Company shops
	50	.....	.....	.....	.....	Spring	.....	.....	Company shops
Cuba Northern	25	Flat	60,000	Steel	.....	.....	.....	.....	Am. Car & Fdy.
French State Railways.....	2,000	Box	40,000	Steel frame	23,300	European	Pedestal	Canvas	Keith
	10,000	Four-wheel	.....	.....	.....	.....	.....	.....	Standard Steel
	1,000	N. g. flat	.....	Steel	.....	.....	.....	.....	Am. Car & Fdy.
	850	N. g. gondola	.....	St. und'frame	.....	.....	.....	.....	Am. Car & Fdy.
	1,000	N. g. flat	.....	.....	.....	.....	.....	.....	
	6,000	.....	.....	.....	.....	.....	Arch bar	.....	Western Steel
Java State Railways.....	400	.....	.....	.....	.....	.....	.....	.....	Standard Steel
			.....	.....	.....	.....	.....	.....	Standard Steel
Katanga Ry.	200	Hopper	77,000	Steel	35,620	Spring	.....	.....	Pressed Steel
	100	Gondola	77,000	Steel	32,800	Spring	.....	.....	Pressed Steel
Mar. Steel Forg'gs Co. (France).	100	General ser.	100,000	Steel	41,412	European	.....	.....	Pressed Steel
Paris-Orleans Ry. (Rrance).....	850	Gondola	30,000	Steel frame	18,264	European	.....	.....	Can. Car & Fdy.
Russian Government	6,500	Box	1,200 pood	St. frame	.....	European	.....	Metal	Am. Car & Fdy.
	3,500	Box	1,200 pood	St. frame	.....	European	.....	Metal	Standard Steel
	2,000	Box	1,200 pood	St. frame	.....	European	.....	Metal	Can. Car & Fdy.
	10,000	Box	1,200 pood	St. frame	.....	European	.....	Metal	Am. Car & Fdy.
	10,000	Box	.....	.....	.....	European	.....	Metal	Standard Steel
	7,500	Box	.....	.....	.....	European	.....	Metal	Pressed Steel
	3,000	Box			.....	.....	.....	Metal	Seattle



Position-Light Signals near Haddonfield, New Jersey

Progress in Railroad Signaling During the Year

Length of Automatic-Block-Signaled Lines Now More Than 35,000 Miles; Marked Progress in Interlocking

A REVIEW of the statistics of block and interlocking signal construction during the past year, and of the plants now in course of construction, shows, in the United States and Canada, a total of 2,809 miles of road block signaled since January 1, 1917, or about 700 miles greater than the total increase recorded, one year ago, for the calendar year 1916. Exact comparisons of total mileage of road worked under the space-interval system cannot be made, because there is a large amount of automatic signaling which takes the place of the manual block system and for which complete statistics are not available. Nearly all of this new signaling is automatic, and in the work now under construction (1,633 miles in the United States) and proposed for the year 1918 (1,240 miles) the non-automatic is entirely negligible.

In interlocking as well as in block signaling the roads have made considerably more progress in 1917 than they did in 1916. The total number of plants completed, 187, compares with 98 in the previous year; and under construction, 164 plants, as compared with 119. The proposed new work for 1918, totaling 108 plants, is 31 less than the number proposed a year ago; but this is the least useful figure in our summaries, because numerous important roads are not ready to tell of their plans. The work on the New York city elevated and subway lines makes up a large part of the total in this column, and those lines still report as "contemplated" some plants that were included in the list one year ago. The Interborough, operating both elevated and subway lines, is spending several millions of dollars on this class of work (including some block signals, not specifically mentioned in the present review) and has about 1,000 men at present employed on signal construction. The plans of the Brooklyn Rapid Transit Company, now operating in Manhattan as well as in Brooklyn, are only less extensive than those of the Interborough.

The figures, so far as available, together with data concerning work now under construction, and in respect of plans for 1918, are shown in the following tables.

NEW BLOCK SIGNALS COMPLETED IN 1917; MILES OF ROAD

	Automatic (Table A)			Manual (Table D)			
	S.T. miles	D.T. miles	Total miles	S.T. miles	D.T. miles	Total miles	Total miles
United States	1,667	817	2,484	294	7	301	2,785
Canada	3	11	14	10	..	10	24
Total	1,670	828	2,498	304	7	311	2,809

NEW BLOCK SIGNALS UNDER CONSTRUCTION, DECEMBER 31, 1917

	Automatic (Table B)			Manual (Table E)			
	S.T. miles	D.T. miles	Total miles	S.T. miles	D.T. miles	Total miles	Total miles
United States	972	666	1,638	9	..	9	1,647
Canada	3	3	6	0	..	0	6
Total	975	669	1,644	9	..	9	1,653

NEW BLOCK SIGNALING PROPOSED FOR 1918

	Automatic (Table C)			Manual			
	S.T. miles	D.T. miles	Total miles	S.T. miles	D.T. miles	Total miles	Total miles
United States	864	376	1,240	..	..	..	1,240
Canada	9	2	11	..	..	..	11
Total	873	378	1,251	..	..	..	1,251

INTERLOCKING SIGNALS

	Plants	Number of Levers		
		Mechanical	Electric	Total
Completed in 1917—				
United States	179	2,313	1,237	3,550
Canada	8	93	58	151
Under construction Dec. 31, 1917—				
United States	163	1,886	1,310	3,196
Canada	1	7	0	7
Proposed for 1918—				
United States	107	785	1,911	2,696
Canada	1	20	..	20
Total, United States	449	4,984	4,458	9,442
Total, Canada	10	120	58	178
Grand Total	459	5,104	4,516	9,620

The data from which the totals here presented are made up is given in the tables under nine heads, as follows:

A—Automatic Block Signaling Completed in 1917.
B—Automatic Block Signaling Under Construction.
C—Automatic Block Signaling Proposed.
D—Manual Block Signaling Completed in 1917.
E—Manual Block Signaling Under Construction.
F—Manual Block Signaling Proposed.
G—Interlocking Completed in 1917.
H—Interlocking Under Construction.
I—Interlocking Proposed.

TABLE A—AUTOMATIC BLOCK SIGNALS INSTALLED DURING THE PAST YEAR

Road	Miles of Road[a] S.T.	D.T.	From	To	No. of Signals	Type of Signals	Control System	Remarks[16]
Alabama & Vicksburg	16	..	Clinton	Champion Hill	28	Union "S" 3-pos.	Modified train dir.	
Ala. G. S. (See So. Ry.)								
Atchison, T. & S. F.	..	4	La Junta	Casa	8	3-pos. U. Q. d. c.	Non-polarized	
	..	3	Albuquerque	Hahn	6	3-pos. U. Q. d. c.	Non-polarized	
	..	1	Albuquerque	Abajo	5	3-pos. U. Q. d. c.	Non-polarized	
	2	..	Cleburne	Ponetta	4	3-pos. U. Q. d. c.	Non-polarized	
	25	..	N. Pomona	S. Bern'o	40	3-pos. U. Q. a. c.	Non-polarized, line	
	1	..	Redoubt J.	Hobart	5	3-pos. U. Q. a. c.	Non-polarized, line	
	4	..	Stockholm	Larson	8	3-pos. U. C. d. c.	Non-polarized, line	
Atlanta & West Point	33	..	East Point	Newman	..	3-pos. U. Q.	A. P. B.	
Baltimore & Ohio	..	3[15]	Patterson Ck.	N. Branch	8	"T"		Union.
	..	3	N. Branch	Evitts Creek	8	"T"		Union.
	..	12	Warwick, O.	Sterling	24	L. Q.		General Electric Co.
	..	23	Milford G.	La Paz J.	36	"T"		Union.
	4	..	N. Dayton	Johnson	12	"T"		Union; changed from S. T. to D. T.; supersedes manual block system.
	..	26	A. X.	Miami City J.	43	"T"		Supersedes manual.
	13	..	Tippecanoe Cy.	Piqua J.	23	"T"		Supersedes manual.
	..	10	Kirkwood, O.	Swanders	19	"T"		Supersedes manual.
	8	..	Swanders	Botkins	14	"T"		
Buffalo, R. & Pittsb'gh	..	20	J. & B. J.	Clarion J.	41	"2 A" Top-of-mast.	Polarized line	G. R. S.—Road owned by Erie.
	..	2	Boyer	J. & B. J.	2	"2 A" Top-of-mast.	Polarized line	
Boston & Maine	1	..	N. Andover	Stevens	2	Union "B"		
	*	..	Fitchburg		1	Union "B"		
Boston Elevated	..	1		(Tunnel)	9	Light, 3-color		A. C. Track Circuit.
Brooklyn Rapid Tr. Co.	..	3[1]	Times Square	Canal St.	82	Light, 3-color		A. C. Track Circuit.[1]
	..	1	Canal St.	Rector St.	22	Light, 3-color		A. C. Track Circuit.
	..	2	Canal St.	Brooklyn	51	Light, 3-color		A. C. Track Circuit.
Central of Georgia[2]	26	..	Terra Cotta	Ft. Valley	49	Union "S"		
	57	..	Macon J.	Irving	102	Union "S"		
	33	..	Experiment	Hopeville	57	Union "S"		
	16	..	Vandiver	Weems	34	Union "S"		
Chesapeake & Ohio[3]	..	..						
Chicago & N. Western	76[4]	..	Rosemere	Shoreline	151	"2-A" 3 pos. U. Q.	"A. P. B."	G. R. S.
	2	..	Rosemere	Calumet	5	"2-A" 3 pos. U. Q.	"A. P. B."	G. R. S.
	102[4]	..	Clyman	Wyeville	194	"2-A" 3 pos. U. Q.	"A. P. B."	G. R. S.
Chicago & W. Ind.[5]	..	1	Hammond J.		4	"2-A"		
Chicago, B. & Q.	..	74	Crawford, Wis.	Lytle	162	Two-pos. L. Q.		Federal Signal Co.
	..	71	Galesburg, Ill.	Mt. Pleasant, Ia.	173	Two-pos. L. Q.		Federal Signal Co.
	..	33	St. Joseph, Mo.	Napier	83	Two-pos. L. Q.		Federal Signal Co.
	28	..	Lincoln, Neb.	Dorchester	69	Two-pos. L. Q.	"A. P. B."	Federal Signal Co.
	4	4	Omaha, Neb.	Gibson	17	Two-pos. L. Q.		Federal Signal Co.
Chicago Gt. Western	34	..	McIntire	Hayfield	33	"4-A" 2-pos. U. Q.		Federal.
	..	2	Oelwein	Jeff	4	"4-A" 3-pos. U. Q.		Federal.
Chicago, M. & St. P.	22	..	Lennek	Ringling	39	Light, 3-color	A. C. track-ckt	Union.
	42	..	Butte	Deer Lodge	68	Light, 3-color	A. C. track-ckt	Union.
	12	..	Superior	St. Regis	16	Light, 3-color	A. C. track-ckt	Union.
	19	..	St. Regis	Haugan	30	Light, 3-color	A. C. track-ckt	Union.
	97	..	Marengo	Beverly	124	Semaphore, 3-pos.[8]	D. C. Track-ckt	Supersedes manual block system; signals were taken from electrified lines (noted above) which now have light signals.
East St. Louis & Sub.	2	..	Gauntlet		3	Union light	A. C. track-ckt	
Elgin, J. & E.	1	..	Eola		1	Union "B"		
Grand Trunk	17	..	Shelburne, N. H.	Bethel, Me.	22	"2-A"	D. C. 10-volt	G. R. S.
Illinois Central	19	..	Louisville, Ky.	Tip Top	71	"K" 3-pos. U. Q. n. c.	Traffic direction	Hall.
	141	..	Coldwater, Miss.	Vaughn	223	"K" 3-pos. U. Q. n. c.		Hall.
	..	108	Nogan, Miss.	Amite, La.	190	"K" 3-pos. U. Q. n. c.	Traffic direction	Hall.
Interb'gh R. T. (N. Y.)	..	*	143d St.		6	Light	A. C. track-ckt	Automatic stops.
Lehigh Valley	..	*	Buffalo		4	3-pos. U. Q.		
	..	1	Hazleton		5	3-pos. U. Q.		
Long Island	..	3	Oakdale	Sayville	7	"L"		Hall; superseded S. T. manual.
Los Angeles & S. L.	56	..	Los Angeles	Riverside	117	3-pos. U. Q.		
	60	..	Rox	Caliente	96	3-pos. U. Q.		
Louisiana R. & N. Co.	2	..	Frelsen	Orleans J.	1			
Louisville & N.	28	..	Howell, Ind.	Mannie, Ill.	53	3-pos. U. Q.	A. P. B.	
	41	..	Henderson, Ky.	Earlington	66	3-pos. U. Q.	A. P. B.	
	28	..	Cedar Hill, T.	Amqui	46	3-pos. U. Q.	A. P. B.	
Maine Central	..	2	Waterville	Fairfield	4			Changed from S. T. to D. T.
	*	..	Fairfield		1			
Missouri, K. & T.	4	..	M. P. 382		5	Union "S" U. Q.		
Missouri Pacific	68	5	Washin, Mo.	Cole J.	..	3-pos. U. Q.		
	4	..	Military J.	Camp Pike	..			
	2	..	Military J.	N. Little Rk.	..			
Monongahela	34	..	So. Brownsv.	W. Va.	70		A. C. ckts.	
Nashville, C. & St. L.	..	..						
Nashville, C. & St. L.	..	1	N. Y. Tower	Lewis St.	2	"S" Union		
N. Y. Central (Eastern)	..	2	Ghent	Chatham	4	Hall "L" 3-pos. U. Q.		Superseded manual b. s.
	10	..	W. Albany	Schenectady	8	Hall "L" 3-pos. U. Q.		Superseded controlled m. and automatic on parts of four-track line.
	3	..	Schuyler J.	Utica	3	Hall "L" 3-pos. U. Q.		
	..	3	Hoffmans	Rotterdam J.	2	Hall "L" 3-pos. U. Q.		Superseded controlled manual.
	..	16	N. Buffalo	Niagara Falls	35			Reconstruction.
	..	10	Herkimer	Schuyler J.	19			Reconstruction.
Boston & Albany	1	..	Athol J.		2	3-pos. U. Q.	D. C. n. d.	Third track.
C., C., C. & St. L.	3	..	Cold Springs	Springfield	6		Traffic direction	
N. Y. Municipal (see Brooklyn R. T. Co.)								
N. Y., N. H. & H.	..	18[7]	New Haven	Bridgeport	84	3-pos. U. Q.	A C Circuits	Supersedes controlled manual.
	..	13	Stamford	Mamaroneck	91	3-pos. U. Q.	A C Circuits	Supersedes controlled manual.
Norfolk & Western	59	..	E. Radford	Atkins	135	3-pos. U. Q.	A. P. B.	A. C. 60-cycle.
	..	8	Ripplemead	Pearisburg	20	3-pos. U. Q.	Polarized track ckt.	D. C.
	..	3	Alnwick	Toe	8	3-pos. U. Q.	Polarized track ckt.	Changed from single track.
Northern Pacific	216	..	Mandan, Mont.	Glendive	364		A. P. B.	
Pennsylvania	..	7	Camden	Haddonfield	19	Position-light	A. C. track circuit	Union; in place of electro-pneumatic semaphores.
Pennsylvania, West of Pittsburgh	..	37	Richmond	Knightstown	85			Supersedes manual b. s.
	..	3[8]	Roby	Morristee Ave.	6			Supersedes manual b. s.
	..	5	Dinsmore	Colliers	16			Supersedes manual b. s.
Philadelphia & Reading	..	36	Lewisburg	Newberry J.	58	3-pos. U. Q.	A. C. circuits	
Pittsburgh & L. E.	*	..	Bentley		2	"T 2" Union		
Richmond F. & P.	..	56	Doswell	Sandy Gut	76	"2-A"	A. C. circuits	Supersedes manual b. s.
Washington South.	..	26	Sandy Gut	Alexandria	37	"2-A"	A. C. circuits	Supersedes manual b. s.
Southern	..	33	Red Hill	N. Glasgow	41	3-pos. U. Q.	A. C.	
	..	31	N. Switzerland	Gainesville	39	3-pos. U. Q.	A. C.	
	..	10	Whittle	Dry Fork	10	3-pos. U. Q.	A. C.	
	..	6	Duluth, Ga.	Suwanee	6	3-pos. U. Q.	A. C.	
Southern Pacific	3	..	Deming, N.		14			Union.
	4	..	Wall Creek, Ore.	Steinman	12			Union.
So. Pac. (Tex. and La.)	26	..	Hempstead	Cypress	41	"B"		Union. Supersedes manual.
	..	..	Nelson J.	Navasota	5	"B"		Union. Supersedes manual.

TABLE A—AUTOMATIC BLOCK SIGNALS INSTALLED DURING THE PAST YEAR—Continued

Road	Miles of Road[a] S.T.	D.T.	From	To	No. of Signals	Type of Signals	Control System	Remarks[16]
So. Pac., Tex. & La. (Cont'd)	1	..	Mexia		3	"B"		Union. Supersedes manual.
	2	..	Garrett	Ennis	6	"B"		Union. Supersedes manual.
	*	..	Chaney J.		1	"B"		Union. Supersedes manual.
	10	..	Strang	Pasadena	22	"B"		Union. Supersedes manual.
Spokane, P. & S.[9]	..[9]	..			13			
Union Pacific	..	14	Pine Bluff	Burns	38	"B" L. O. two-pos.		Union two arms; home and distant; S. T. changed to D. T.
	..	11	Buford	Hermosa	52	"B" L. O. two-pos.		Union two arms; home and distant; changed from S. T. staff to D. T. automatic.
	..	52	Wamsutter	Pt. Rocks	164	"2-A" L. O.		Union two arms; home and distant S. T. changed to D. T.
	62	..	Wilson, Kans.	Ellis	146	"2-A" L. O.		G. R. S. supersedes manual b. s.
Oregon Short Line	43	..	Weston	McCammon	97	"2-A" L. O.		G. R. S.
	12	..	Spencer	Humphrey	21	"2-A" L. O.		G. R. S.
	*	..	Atwood	Midvale	2	"2-A" L. O.		G. R. S.
Ore.-W. R. & N.[11]	*	..			22	L. O.		
Union Traction (Ind.)	16	..	B. Ripple	Noblesville	21	Light		G. R. S.
	11	..	Summitsville	Jonesboro	15	Light		G. R. S.
Wabash	1	..	Montpelier		1	"S" 3-pos. U. O.		Union.
			Attica		2[12]	"S" 3-pos. U. O.		Union.
Wash. So. (See R. F. P.)								
Western Maryland	..	..	Hagerstown		2	"S" U. O.		Change from single to double tr.
Total	1,667	817						
					—Canada—			
Canadian Pac. (Eastern)	..	..			33[13]	"2 A"		G. R. S.
Canadian Pac. (Western)	..	3	Brandon		5	"2 A"		G. R. S.
	1	..	Kemnay		1	"2 A"		G. R. S.
	..	6	Connaught	Glacier	8[14]			G. R. S.
Grand Trunk	..	2	Vandreuil		4	"2 A"		G. R. S.
Montreal & So. Counties	2	..	Victoria Bridge		2	Light	Directional	
Total	3	11						
Total United States and Canada	1,670	828						

[a] The asterisk indicates a length of less than one mile.

[1] Brooklyn R. T. Co.—Four-track, 3 miles, 82 signals; two-track, 3 miles, 73 signals. All blocks have automatic stops and overlap control; time-control approaching stations and on steep grades.

[2] Central of Georgia—Manual block system discontinued on 48 miles.

[3] Chesapeake & Ohio—This road is installing the automatic train stop of the American Train Control Company between Gordonsville, Va., and Charlottesville, Va., 21 miles. One-third of this—7 miles—is reported as already equipped.

[4] C. & N. W.—Replaces manual block system.

[5] C. & W. I.—Four-track; replaces manual block system.

[6] Chicago, M. & St. P.—Signals removed from Rocky Mountain division.

[7] N. Y., N. H. & H.—Four-track line; semaphores move in the upper left-hand quadrant.

[8] Penn. Lines—Four-track.

[9] S. P. & S.—Automatic signals installed at tunnels and other dangerous locations; a total of 18 miles of track protected.

[11] O.-W. R. & N.—No additional mileage; new signals installed to shorten blocks.

[12] Wabash—To shorten blocks.

[13] Canadian Pacific—Four short sections; 3.7 miles S. T., 6.6 miles D. T.

[14] C. P. R.—Six semaphore; two light.

[15] Baltimore & Ohio—Three-track line.

[16] In each of the first three tables the name of the maker of signal apparatus, where it has been given, is shown, in the last column; Federal; G. R. S. (General Railway Signal Company); Hall; Union (Union Switch & Signal Company), or General Electric Company.

TABLE B—AUTOMATIC BLOCK SIGNALS UNDER CONSTRUCTION, DECEMBER 31, 1917

Road	Miles of Road S.T.	D.T.	From	To	No. of Signals	Type of Signals	Control System	Remarks[16]
Alabama & Vicksburg	8	..	Champion Hill	Smith's	16	"S," 3-pos.	Union	
Atchison, T. & S. Fe	..	9	Shopton	New Boston	9	3-pos. D. C. U. O.	Non-polarized	
	..	10	Sibley	Eton	8	3-pos. D. C. U. O.	Non-polarized	
	..	5	Braddock	Walton	3	3-pos. D. C. U. O.	Non-polarized	
	..	2	Cameron	Bohn	3	3-pos. D. C. U. O.	Non-polarized	
	..	8	Dodge City	Wright	13	3-pos. D. C. U. O.	Non-polarized	
	68	..	Richmond, Cal.	Stockton	40	3-pos. D. C. U. O.	Polarized, line	
	119	..	Larson, Cal.	Fresno	211	3-pos. D. C. U. O.	Polarized, line	
	..	65	Goff's, Cal.	Bagdad	81	3-pos. D. C. U. O.	Polarized, track	
Atlanta & West Point	32	..	Newman	La Grange	..			
	..	6	Atlanta	E. Point	..	"S," A. C., Union		Joint with Central of Georgia.
Atlantic Coast Line	6	1	Florence	Java	11	"S" Union		
Baltimore & Ohio	..	1	Miami City J.	Dayton	2	"T"		Union.
	5	..	Piqua J.	Kirkwood	14	"T"		Union.
	19	..	Botkins	Erie J.	30	"4"		Federal.
	..	92	Cumberland	Connelsv.	175	"T 2"	A. C.	Union.
	..	1	Cumb'd, W. St.	Viaduct J.	2	"T"		Union.
	..	20	Greenwich	Attica	40	L. O.		General Electric.
B. & O. C. T.	1	..	75th St.		1			
Buffalo, Roch. & P.	3	3	Marion City	Home	16	"2 A" Top-of-mast.	Polarized, line	G. R. S.
Boston Elevated	..	2			7	Light, 3-color	A. C. circuits	
Central of Georgia	..	4	Irving	Experiment	6	"S" Union		
	..	9	Hapeville	Atlanta	17	"S" Union	A. C. circuits	
Chesapeake & Ohio	..	..			11[3]			
Chicago, B. & Q.	..	47	Mt. Pleasant	Ottumwa	97	2-pos. L. O.		Federal; G. R. S.
Chicago, Mil. & St. Paul	..	3	S. Minneapolis		8	Light, 3-color	A. C. circuits	
					5	"2 A"		
	..	2	Milwaukee		24	"2 A" 3-pos.	D. C.	Replacing 2-pos. L. O.; G. R. S.
	36	..	Harlowton	Lennep	50	Light, 3-color	A. C.	Union.
	34	..	Three Forks	Piedmont	43	Light, 3-color	A. C.	Union.
	42	..	Deer Lodge	Superior	191	Light, 3-color	A. C.	Union.
El Paso & S. W.	6	..	El Paso	Material Yd.	10	"S," U. O.		Union.
	15	..	El Paso	Mastodon	27	"S," U. O.		Union.
	30	..	Moore's Spurr	Pratt	44	"S," U. O.		Union.
	4	..	Junction	Forrest	6	"S," U. O.		Union.
	25	..	Ostoon	Lewis Springs	52	"S," U. O.		Union.
Erie	..	35	Lomax, Ind.	Griffith	70	"S" Union, U. O.		
Grand Trunk	17	..	Shelburne, Mt.	Bethel, Me.	22	"2 A"		G. R. S., D. C., 10-volt.
Illinois Central	91	..	Broadview	Freeport	103	"K" 3-pos. U. O. n. c.	Traffic direction	Hall; total 210 miles.
	3	..	Waterloo, Ia.	Mona	6	"K" 3-pos. U. O. n. c.	Traffic direction	Hall; total 210 miles.
	103	..	Gilman, Ill.	Springfield	189	"K" 3-pos. U. O. n. c.	Traffic direction	Hall; total 210 miles.
	..	12	Princeton, Ky.	Eddyville	19	"K" 3-pos. U. O. n. c.	Traffic direction	Hall; total 210 miles.
	1	..	Fulton, Ky.	Oaks	11	"K" 3-pos. U. O. n. c.	Traffic direction	Hall; total 210 miles.
Yazoo & M. V.	1	..	Leland		2	"K" 3-pos. U. O. n. c.	Traffic direction	Hall; total 210 miles.
Lake Erie and Eastern (See Pitts. & L. E.)								
Los Angeles & S. L.	60	..	Caliente	Modena	90	3-pos. U. O.		
Louisville & Washington	67	..	Earlington, Ky.	Cedar Hill	117	3-pos. U. O.	A. P. B.	
	..	10	Montford, Tenn.	Nashville	19	3-pos. U. O.		
New York Central (E.)	..	7	L. Falls	Herkimer	16	"L" 3-pos. U. O.		Hall; reconstruction.
Michigan Central	8	..	Paine's	Mershon	28	"B" and "T 2"		Union.
	4	..	Hoyt	Saginaw	18	"B" and "T 2"		Union.
N. Y., N. H. & H.	..	8[b]	Mamaroneck	Woodlawn, N. Y.	47	3-pos. U. O.	A. C.	Left h'd; replacing controlled m.
	..	20	Braintree	Greenbush	49	3-pos. U. O.	A. C.	
N. Y., Phila. & Norfolk	..	30	Delmar	Pocomoke	46	Position Light	A. C.	

TABLE B—AUTOMATIC BLOCK SIGNALS UNDER CONSTRUCTION, DECEMBER 31, 1917—Continued.

Road	Miles of Road S.T.	Miles of Road D.T.	From	To	No. of Signals	Type of Signals	Control System	Remarks[16]
Norfolk & Western	49	..	Atkins	Bristol	99	3-pos. U. Q.	A. P. B.; A. C.	60-cycle.
Pennsylvania	..	7	Selinsgrove	Northumberland	29	Position Light	A. C.	Union; replacing manual.
Pennsylvania (add'l)	..	6	N. Philadelphia	Chestnut Hill	27	Position-light	A. C. track circuit	Union; replace manual signals.
Penn. (West of Pitts.)	17[c]	..	Leetonia	Alliance J.	23			
Pere Marquette	26	..	So. Lyon	Fowlerville	34	3-pos. U. Q.		
	13	..	Fennville	G. Junction	14	3-pos. U. Q.		
	18	..	Gross	Riverside	25	3-pos. U. Q.		
Pittsburgh & L. E.	..	8	Struthers	Mosier J.	22	"T 2" Union		
Southern	..	183	Charlotte	N. Switzerland	228	3-pos. U. Q.	A. C.	
Southern Pacific	2	..	White Pt., Or.	Siskiyou	15			Union.
	..	8	Stockham	Polvo, Ariz.	47			Union.
So. Pac. (La. and Tex.)	..	9	Stella J.	Eureka	22	"B"		Union. Supersedes manual.
Union Pacific	..	18	Burns, Wyo.	Archer	66	"B" 2-pos. L. Q.		Union; S. T. changed to D. T.
Oregon Short Line	13	..	Pocatello	Ft. Hall	34	"2 A" L. Q.		G. R. S.
Wabash	..	1	Decatur		1	"S" 3-pos. U. Q.		Union.
	13	..	Clymers	Delphi	17	"S" 3-pos. U. Q.		Union.
	13	..	Delphi	Lafayette	14	"S" 3-pos. U. Q.		Union.
W. Maryland	..	..	Big Pool	Clear Spring	7			S. T. converted to double track.
Total	972	666						
				Canada				
Canadian Pacific (E.)	1	1	Vaudreuil		6			
Canadian Pacific (W.)	..	2	Pasqua		2			
	2	..	Java		3			
Total	3	3						
Total United States and Canada	975	669						

[16]See Note 16 under Table A.

[a] Chesapeake & Ohio—Eleven "tonnage signals" on ascending grade; also, two-position L. Q. on 12 miles are being changed to 3-position U. Q.

[b] N. Y., N. H. & H.—Four-track.

[c] Penn. (W. P.)—Third track.

TABLE C—AUTOMATIC BLOCK SIGNALS—CONTEMPLATED CONSTRUCTION FOR 1918

Road	Miles of Road S.T.	Miles of Road D.T.	From	To	No. of Signals	Type of Signals	Control System	Remarks[16]
Atchison, T. & S. Fe	..	5	Glorietta	Decatur	8	3-pos., D. C., U. Q.	Non-polarized	
	..	2	Hutchinson		6	3-pos., D. C., U. Q.	Non-polarized	
	39	..	Gainesville	Ardmore	70	3-pos., D. C., U. Q.	Non-polarized	
	24	..	Dougherty	Gulf J.	43	3-pos., D. C., U. Q.	Non-polarized	
	4	..	Lindsay Br. J.	Gulf J.	7	3-pos., D. C., U. Q.	Non-polarized	
	44	..	Calwa, Cal.	Corcoran	80	3-pos., A. C., U. Q.	Polarized, line	
	..	24	Defiance	Perea	31	3-pos., A. C., U. Q.	Polarized, track	
	..	69	Daggetts	Bagdad	72	3-pos., A. C., U. Q.	Polarized, track	
	..	9	Laguna	Rito	12	3-pos., A. C., U. Q.	Polarized, track	
	..	10	Riverside	San Bernardino	12	3-pos., A. C., U. Q.		
Boston & Maine	32	..	N. Cambridge	Clinton J.	75	"B"		Union.
Boston Elevated	..	1	Sullivan Sq.	Everett	11	Light, 3-color	A. C. Circuits	On elevated structure.
Brooklyn R. T. Co.	..	32	See note in text.		523	Light, 3-color		G. R. S.
Chesapeake & Ohio	..	8	Richmond	Westham	11	3-pos. U. Q.		
Chicago, Ind. & Louis.	17	..	Salem, Ind.	Borden	30	3-pos. U. Q.	A. P. B.	
Chic., Mil. & St. Paul	..	15	Savanna	G. Island	16	"2-A," 3-pos.	D. C.	G. R. S.; to replace 2-pos. L. Q.
	98	..	Othello	Cle Elum	136	Light, 3-color	A. C.	
	72	..	Cle Elum	Maple Valley	101	Light, 3-color	A. C.	
	28	..	Black River J.	Tacoma	48	Light, 3-color	A. C.	
Chi., T. H. & S. E.	2	..				"B" 2-pos.		
Cumberland Valley	..	6	Newville	Oakville	15	"B"	A. C.	Union.
El Paso & S. W.	19	..	Forrest	Lee	38	"S," U. Q.		Union.
	28	..	Three Rivers	Carrizozo	56	"S," U. Q.		Union.
Los Angeles & S. L.	120	..	Lynndyl	Salt Lake City	180			
Louisville & Nashville	12	..	Jackson, Ky.	Oakdale	27	3-pos. U. Q.	A. P. B.	
New York Central	..	..						
Cleve. C. C. & St. L.	..	4	Galion	Crestline	6	3-pos.		
N. Y. Municipal Rys. (See B'klyn R. T. Co.)								
N. Y., N. H. & Hartford	..	29	Atlantic	Middleboro	..	3-pos. U. Q. left h'd.	A. C.	Replacing controlled manual.
	..	30	Readville	Boston Sw.	..	3-pos. U. Q. left h'd.	A. C.	Replacing controlled manual.
N. Y. State Rys.	..	2	Bradley's B.	Walker's	8		A. C.	
Norfolk & Western	..	..						
Northern Pacific	..	17	Rice, Minn.	L. Falls	22			
	92	..	Toston, Mont.	Garrison	162		A. P. B.	
	..	7	Missoula	De Smet	11			
	71	..	De Smet	St. Regis	117		A. P. B.	
	22	..	St. Regis	Paradise	37		A. P. B.	
	..	24	Easton, Wash.	Lester	38			
Philadelphia & Reading	..	15	Del. River	Skillmans	70	3-pos. U. Q.	A. C.	Part 3-track; part 4-track. Superseded enclosed disk sig.
Southern Pacific	10	..	Snowdon, Cal.	Hornbrook	34			Union.
	1	..	Hilt, Cal.		4			Union.
	3	..	Siskiyou	Wall Creek	2			Union.
	13	..	Grant's Pass.	Hugo	24			Union.
	25	..	Roseburg	Yoncalla	96			Union.
	10	..	Walker	Goshen	18			Union.
	32	..	Red Rock	Tucson	76			Union.
	5	..	Oswego, Or.	Cook	13	Light		
So. Pac. (La. and Tex.)	13	..	Courtney	Hempstead	24	"B"		Union; supersedes manual.
	7	..	El Paso	Alfalfa	22	"B"		Union; supersedes manual.
	..	9	Withers	San Antonio	34	"B"		Union; supersedes manual.
Union Pacific	..	20	Manhattan, Kan.	Junction City	83	"B" 2-pos. L. Q.		Union; S. T. changed to double track.
	..	27	Le Roy, Wyo.	Evanston	112	"B" 2-pos. L. Q.		Union; S. T. changed to double track.
	..	11	King Hill	Doran	32	"2 A" L. Q.		G. R. S.; S. T. changed to double track.
Wabash	13	..	Peru	Clymers	21	"S" 3-pos. U. Q.		Union.
	8	..	Birmingham	Murray	6	"S" 3-pos. U. Q.		Union.
Total	864	376						
				Canada				
Canadian Gov. (Eastern)	2	2	Quebec Bridge		12		D. C.	On single track the staff will be used.
	4	..	Newcastle	Derby J.	11		A. P. B.	
	3	..	Various		6		A. P. B.	
9 2 Total	9	2						
Total United States and Canada	873	378						

[16]See Note 16 under Table A.

Table D, manual block signaling completed during the year, is even shorter than in other recent years; its brevity compared with the record of automatic signal progress, again illustrates the increasing appreciation, among railroad officers everywhere, of the value of the automatic system and of its varied elements of superiority over any manual system.

Tables E and F are still shorter. Under Table E, Manual Block Signaling Under Construction, there is reported only one item: New York, New Haven & Hartford, Berlin, Conn., to Middletown, 9 miles, single-track, electric train staff.

Table F, New Manual Block Signaling Proposed for 1918, is omitted entirely, there being nothing to report.

Position-Light Signals

It will be noted that on the Pennsylvania and on the New York, Philadelphia & Norfolk, position-light signals are being installed quite extensively. The use of these signals is perhaps the most notable novelty in the signaling record of the year, and pictures of some of the latest installations (on the West Jersey & Seashore) are shown at the head of this article. Reading from left to right the first of the three views illustrates a signal at an interlocking, showing the proceed indication for low speed. The second picture shows an automatic signal indicating proceed. The marker light, some distance below the vertical row of four lights, is not energized; this light shows only when the lights at the top indicate stop (four lights in a horizontal row). The third picture shows a distant signal to an interlocking plant; it indicates that the next signal will be found to show "proceed at medium speed." If, for any reason, the top row of lights in this signal should go out, the bottom row would also be extinguished, so that there is no danger that the lower row may be mistaken for a proceed signal.

The items shown against the two roads named aggregate about 25 position-light signals installed in 1917, and 170 now under construction; and altogether there are now about 600 of these signals in service. Adding to this number those now under construction, and including also some distant switch signals, which have not appeared in any statistical review, approximately 870 of these signals have been installed or are now under construction.

Block Signaling Proposed

The 523 signals embraced in the statement of the Brooklyn Rapid Transit Company in Table C are for the new subways now being built for operation by this company in both Manhattan and Brooklyn boroughs, New York city. The Fifty-ninth street line, Manhattan, is two-track; from Fifty-ninth street southward to Forty-second street the line is four-track; from Rector street to Prospect Park, four miles, two-track. Fifteen miles of this mileage represents work being done to equip existing tracks, already signaled, with

TABLE D—MANUAL BLOCK SIGNALS COMPLETED IN 1917

	Miles	From	To
Atchison, Topeka & Santa Fe[a]	44	Hicks, Cal.	Summit
Chesapeake & Ohio[a]	29	Lineville, Ky.	Waverly, O.
Long Island[b]	7	Fresh Pond J.	Ocean Ave.
Northern Pacific	15	S. Tacoma, Wash.	Nisqually
	73	St. Clair, Wash.	Hoquiam
	14	Centralia, Wash.	Gate
Pennsylvania (W. P.)[c]	1	Rendcomb J.	
Texas & Pacific[a]	118	Addis, La.	Boyce
Total	301		
Canada			
Canadian Pacific[a]	44	Ottawa	Chaudiere
	44	Chaudiere	Hurdman
	42	Hurdman	Ottawa
Total	10		
Grand Total	311		

[a]Communication by telephone.
[b]Long Island, double track; all other items in this table are single track.
[c]Controlled Manual.
[d]Staff system.

TABLE G—INTERLOCKING PLANTS COMPLETED IN 1917

1	2	3	4	5
			No. of Levers	
Road	Plants**	Character††	Mechanical	Electric
Atchison, Topeka & Santa Fe	8	C.	38	..
	..	J.	21	..
	..	T.	24	..
	..	X.	28	..
Atlantic Coast Line	11	C.	107	..
	..	D.	23	..
Baltimore & Ohio	3	J. X.	49	*
	..	J. X.	51	..
Baltimore & Ohio, C. T.	2	C.	35	..
Boston & Maine	2	J.	29	*
	..	C.	..	9
Brooklyn Rapid Transit Co.	8	J. T. X.	..	104
	..	T. X.	10	33
Chesapeake & Ohio	2	E.	16	..
	..	X.	24	*
Chicago & Alton	1	C.	..	78
Chicago & N. W.	1	C. J.	..	99
Chicago, Burlington & Quincy	11	C.	36	..
	..	D.	23	*
	..	D.	..	16
	..	J.	61	*
	..	T.	10	..
Chi., Mil. & St. Paul	4	C.	31	..
	..	D.	..	12
Cumberland Valley	1	T.	..	14
Delaware & Hudson	1	....	30	*
Del., Lack. & Western	2	C.	38	33
	..	T.	..	23
Fort Smith & W.	1	C.	14	..
Grand Trunk	5	E.	109	..
Illinois Central	2	J.	27	..
	..	D.	..	10
Yazoo & M. V.	1	C.	..	33
Illinois Southern	1	C.	16	..
Interboro R. T. Co. (N. Y.)	17[a]	....	..	268
	..	J.	5	..
Lehigh Valley	1	J. C.	..	90
Long Island	2	J.	24	*
	..	E.	6	..
Los Angeles & S. L.	1	E.	..	..
Louisiana, R. & N.	1	See Yazoo & M. V.		
Louisville & Nashville	5	C.	3	8
	..	D.	10	*
	..	J.	18	*
Maine Central	1	J.	23	7
	1	T.	32	11
Missouri, Kansas & Texas	13	....	201†	..
Missouri Pac. (see M., K. & T.)	5	J.	12	..
Mobile & Ohio	2	C.	29	*
Nashv., C. & St. Louis	3	C.	..	17
	..	D.	10	..
	..	E. D. T.	15	*
New York Central	11	J. X	408	*
Boston & Albany	1	....	..	45
C., C., C. & St. Louis	2	C.	..	45
	..	C.	45	*
Michigan Central	1	E.	12	..
New York, New Haven & Hart	10	X.	213	*
	..	X.	..	53
	..	D.	..	8
	..	J.	12	..
Norfolk & Western	3	E. D. T.	..	25
	..	C.	..	8
Pennsylvania	7	....	80	20
Pennsylvania W. Pitts.	4	C.	34	..
	..	E. T. T.	12	..
	..	E. D. T.	20	..
	..	J.	35	..
St. Louis-San Francisco	3	C	34	..
	..	....	..	4
St. Louis S. W.	1	C.	4	..
Seaboard Air Line	6	C.	17	..
	..	D.	12	..
	..	T.	18	..
Southern	2	J.	49	..
Southern Pacific	4	C.	8	..
	..	D.	..	20
Toledo, St. Louis & W.	1	C.	21	..
Union Pacific	1	T.	..	105
O.-W., R. & N.	1	D.	..	12
Virginian	1	D.	..	5
Wabash	1	C.	12	..
Total	179	...	2,313	1,237
Canada				
Canadian Government	1	J. D.	..	20
Canadian Northern	2	E.	10	..
Canadian Pacific	4	C.	37	..
	..	C. J.	36	..
	..	J.	..	38
Kettle Valley	1	C. J.	10	..
Total	8	...	93	58
Grand Total	187	....	2,406	1,295

** In Tables G, H and I, the number in column 2 indicates the total number of plants reported by the road against which the number appears.

†† In column 3 the letters mean: C—Crossing; D—Drawbridge; E—Electric Railway Crossing; E. D. T.—End of Double Track; E. T. T.—End of Third Track; J—Junction; M—Miscellaneous and unclassified; T—Terminal; X—Crossovers.

* In column 5 the asterisk indicates that the item is electro-mechanical and that the number in column 4 includes both mechanical and electric levers.

† Twelve plants; including 9 crossings with Missouri Pacific.

[a] Interboro; 17 plants electro-pneumatic.

[b] D. L. & W.; electro-pneumatic plant at Buffalo.

apparatus for the operation of the automatic block system in either direction on the same track. Where the signaling is arranged for the movement of trains in either direction on the same track, the signals which, for the time being, are for movements against the current of traffic, are locked so that they cannot be moved. Automatic train stops are used throughout, and, in connection with these, time or speed control apparatus is used approaching stations and on steep grades.

TABLE H—INTERLOCKING PLANTS UNDER CONSTRUCTION DECEMBER 31, 1917

1	2	3	4	5
			No. of Levers	
Road	Plants**	Character††	Mechanical	Electric
Atchison, Topeka & Santa Fe.	8	C.	119	42
	..	J.	12	..
	..	X.	15	..
Atlantic Coast Line.....	7	C.	36	*
	..	D.	11	..
	..	J.	24	..
Baltimore & Ohio.....	3	J. X.	47	..
	..	J. X.	37	*
Buffalo, R. & P.....	4	E. D. T.	8	..
	..	J.	..	11
	..	J.	12	20
Chicago & Alton.....	1	C.	24	..
Chicago, Burlington & Quincy.	6	C.	66	..
	..	T.	..	84
Chicago, Milwaukee & St. Paul	1	D.	..	..
Del., Lack. & Western[1].....	1	....	..	21
Fort Dodge, D. M. & S.....	1	C.	16	..
Illinois Central	2	C.	13	..
Yazoo & M. V.....	2	J.	..	53
	..	D.	8	..
	..	J.	21	..
Illinois Traction	1	C.	15	..
Interborough R. T. Co.[1].....	36	J. X.	..	471
Louisville & W.....	5	D.	24	*
	..	E. D. T.	9	..
	..	J.	40	*
Missouri Kansas & Texas.....	7	C.	127	..
Missouri Pacific	1	C.	35	..
Nash., C. & St. L.[1].....	2	T.	..	34
New York Central (East).....	5	C. J.	49	*
	..	T.	8	*
	..	X.	65	*
New York Central (West)....	3	J.	15	..
	..	J. T.	..	6
	..	X.	..	37
C., C., C. & St. L.....	2	T.	37	*
New York, N. H. & H.....	14	D.	..	41
	..	D. X.	64	41
	..	T. X.	76	..
	..	J.	124	16
	..	T.	80	39
	..	J. X.	60	..
	..	X.	16	..
New York, P. & N.....	1	D.	4	6
Northern Pacific	4	C.	48	..
Pennsylvania	24	C.	12	42
	..	J.	8	..
	..	J. D.	8	*
	..	T.	..	83[1]
	..	X.	12	..
	..	M.	169	158
Penn. (W. Pitts.).....	2	C.	39	..
	..	M.	19	..
St. Louis-S. F.....	5	C.	108	*
Seaboard Air Line.....	6	C.	9	..
	..	D.	15	..
Southern	8	C.	35	35
	..	C. J.	37	..
	..	J.	45	..
	..	M.	4	..
Southern Pacific[1]	2	J.	..	36
Southern Pacific (Tex. and La.)	1	M.	2	..
Total	163	....	1,886	1,310
	Canada			
Grand Trunk	1	E.	7	..
Grand Total	164	....	1,893	1,310

[1] Electro-pneumatic; D. L. & W.; Interboro; N. C. & St. L.; Pennsylvania (Philadelphia); Southern Pacific (San Francisco).
* Electro-mechanical; see note under Table G.
** See note under Table G.
†† See note under Table G.

Electro-Pneumatic Interlocking

The reports received indicate that electro-pneumatic interlocking has been installed during the past year on only two roads; on the Delaware, Lackawanna & Western, at the Buffalo Terminal, 23 levers, and on the Interborough Rapid Transit Company, 268 levers. The statement of the Interborough covers a large number of plants on the new subway and elevated lines in New York city—boroughs of Manhattan, Bronx, Queens and Brooklyn—which have been under construction during the past two years and which are now in partial operation. A large amount of electro-pneumatic work on the Interborough is to be finished in 1918, as will be seen by the statements in Tables H and I.

New Interlocking Completed

The figures in Table G are to be taken as an exhibit, not of the precise amount in the increase in interlocking apparatus in use in the country, but rather as showing the work that has been done during the past twelve months; for a considerable proportion of the items represent, not an entirely new plant, but reconstruction of an old one, or important enlargements to provide for new tracks or rearrangement of tracks. Some duplications are included, also, the same joint plant being reported by two roads. These observations apply also to Tables H and I.

The new work done by the Brooklyn Rapid Transit Company and shown in Table G is on the subways now partly completed in both the Brooklyn and Manhattan boroughs, New York City. In Manhattan there are interlockings (electric) at 34th street; Union square, Canal street, City Hall. In Brooklyn one at Greenwood avenue, ten levers, electric. There are mechanical interlockings at Coney Island, Rockaway Parkway and 105th street. Light signals are used at all of these plants and automatic train stops are to be used generally. The machines have illuminated track diagrams and lever lights. All plants have approach locking and electric switch locking.

The interlocking on the New York Central at Berea, Ohio,

TABLE I—NEW INTERLOCKING PROPOSED FOR 1918

1	2	3	4	5
			No. of Levers	
Road	Plants**	Character††	Mechanical	Electric
Atchison, Topeka & Santa Fe..	8	C.	6	..
	..	C. J.	30	..
	..	J.	45	..
	..	T.	20	..
	..	X.	35	..
Balt. & O., C. T.....	1	C. J.	68	..
Boston & Maine[1].....	3	C.	..	68
	..	J.	50	*
Boston Elevated[2]	2	D. J.	..	70
	..	T.	..	5
Brooklyn Rapid Transit Co.[2]....	16	D. J. X.	..	522
	..	X.	..	8
	..	X.	8	..
	..	M.	..	62
Chesapeake & Ohio.....	5	J.	13	*
	..	J.	..	54
	..	X.	65	*
Chicago, Ind. & L.....	1	C.	16	..
Chicago, Milwaukee & St. Paul.	3	C.	54	..
Delaware & Hudson.....	1	J.	20	..
Erie	2	T.	..	64
Interboro[1]	22	J. X.	..	228
Kansas City Terminal.....	2	C.	..	48[1]
	..	J.	..	10*
Louisville & Nashville.....	2	J.	..	53
	..	E. D. T.	..	4
Maine Central	1	J.	22	..
Missouri, K. & T.....	3	C.	4	14
	..	C.	58	..
Nashv., C. & St. L.....	4	J.	..	29
	..	T.	..	125[1]
N. Y. C. (T. & O. C.).....	1	C.	..	120
Philadelphia & Reading.....	10	J.	..	53
	..	M.	..	124
Richmond F. & P.....	1	J.	..	..
Southern Pacific	3	J.	22	..
	..	J.	..	10
Southern Pacific (Tex. and La.)	4	C.	36	28
	..	D.	4	..
Union Pacific	8	C.	25	..
	..	C. T.	24	..
	..	E. D. T.	54	..
	..	J.	6	..
Wabash	1	C.	52	..
Western Pacific	3	....	48	..
Total	107	....	785	1,911
	Canada			
Canadian Government.....	1	C. J.	20	..
Grand Total	108	....	805	1,911

* Electro-mechanical; see note under Table G.
** See note under Table G.
†† See notes under Table G.
[1] Electro-pneumatic; B. & M.; B. Elevated; Interboro; Kansas City Terminal; N. C. & St. L.
[2] B. R. T.; includes one plant electro-pneumatic.

(Table G) has 56 working levers, of which 23 were added this year. The signals and switches of the C. C. C. & St. L. are controlled by an electric interlocking machine mounted on the existing mechanical machine. Route locking has been provided for all routes. The electric machine is model 2 C, G. R. S.

Interlocking Under Construction

The column headed "Electric" in Table H includes electro-pneumatic; it contains data from five roads on which electro-pneumatic interlocking plants are under construction, namely: the Delaware, Lackawanna & Western (Orange), the Interborough Rapid Transit Company, the Pennsylvania Railroad (Philadelphia, Broad street), and the Southern Pacific (San Francisco). The work on the Interborough is in connection with the new subway and elevated railroads now under construction in the boroughs of Manhattan, Bronx and Queens, New York City. There are 19 plants in Manhattan aggregating 226 levers; 14 plants in the Bronx, aggregating 218 levers, and 3 plants, aggregating 27 levers, in Queens.

Interlocking Proposed for 1918

The "Electric" column in Table I shows electro-pneumatic plants proposed on four roads, the Boston & Maine (East Somerville), the Boston Elevated, the Brooklyn Rapid Transit Company and the Interborough Rapid Transit Company. The work on the Boston Elevated is in connection with an extension which is being built to Everett, 4 miles north of Boston. The Brooklyn Rapid Transit Company reports 1 electro-pneumatic plant proposed at Wyckoff avenue, 8 levers. All the rest of the power interlocking reported here by the Brooklyn Rapid Transit Company—14 plants, 582 levers—is all-electric. The extensions of elevated lines to be operated by this company include one to Coney Island, where there is a drawbridge requiring, with the terminal switches, 115 levers. At East New York there are three towers, A, B and C, which will have, respectively, 22 levers, 136 levers and 45 levers.

The new work to be done on the Interborough in 1918 includes 22 plants aggregating 228 levers.

Railroad Hearings Before The Senate Committee

Chairman Hall and Other Members of the Interstate Commerce Commission Are Questioned

HEARINGS BEFORE THE SENATE COMMITTEE on Interstate Commerce, undertaken in response to a resolution introduced by Senator Cummins on December 18 ordering an investigation and report on the recommendations made by the Interstate Commerce Commission for the unification of the railroads, were begun on December 29. The investigation had been postponed at the request of the President and further delayed by the death of Senator Newlands so that when the committee met on December 29 nothing had been done except to obtain some statistical information in response to a series of questions addressed to the commission and to the Railroads' War Board. In view of the President's proclamation taking over the railroads, the committee was undecided whether to proceed, but for the purpose of securing information having a bearing on the legislation to be asked by the President it was concluded to hear from the members of the Interstate Commerce Commission who had been called. The Republican members of the committee indicated strongly their opposition to the action of the President.

Henry C. Hall, chairman of the commission, told the committee that the action of the President cannot be ascribed to any failure on the part of the railroads; that they have been "exceedingly diligent and have made a zealous and very effective effort in dealing with a weighty problem and have accomplished very great results, but they have been hampered by the laws" and that much of the congestion is attributable to the abuse of preference orders by the government departments. He also declined to say that it was necessary for the President to take over the roads in order to secure their unification, pointing out that the commission had recommended another alternative, but he declared that under government control the railroads would have greater opportunity to succeed than they have had under restrictive laws.

Senator Cummins asked him to describe the "difficulties and deficiencies in transportation" which had led the commission to make its special report. Chairman Hall said it would be difficult to single out any one reason from the many which had influenced its conclusion. "Physically the railroads are all right," he said. "The division between them is artificial, in a sense similar to the division of the nation into states, and is represented by lines of ownership, but the physical facilities constitute practically a national entity. The difficulties that hinder their fullest use are not physical but result from the competitive influence between roads and from certain statutes that the states and the nation have seen fit to impose. When prohibited by law from pooling it takes a very high spirit of patriotism indeed for a railroad to see its revenues depleted by sending traffic over another line. There are many ways of getting freight from one point to another and there is always one shorter line. It has become the usage to send traffic through certain gateways and when you suddenly superimpose upon it such a great volume of traffic as has never been known, resulting from the war, unless something is done to divert traffic from its accustomed routes congestion of the gateways naturally results.

"If the railroads were all owned by one corporation it would naturally divert traffic from one line to another in such a way that the entire plant would be utilized in the most efficient way as a whole and if certain lines got choked others would be used. You have here a great plant owned by different companies, each using what it has, but regardless of its original purpose, when looked at as an engine for the conduct of the war it seems to be desirable that it should be used as one plant."

Railroads Hampered by Laws

"Wherein, then, have the railroads failed, if they have failed?" asked Senator Watson.

"I have not suggested that they have failed," replied Chairman Hall. "They have accomplished very great results, but they have been hampered by the laws."

"Then your theory is that the director general can do what the railroads have not been able to do by setting aside the laws?"

"He doesn't have to set aside the laws," said Chairman Hall. "They don't apply to him, because he can't combine or conspire with himself."

As an example of what Mr. McAdoo can accomplish, Mr. Hall pointed out that the Commission on Car Service has ordered 225,000 empty cars from the congested region into the west and south and that the intermediate carriers have not only received no revenue from them but have had to pay

the per diem expense. "And they have done this cheerfully at the mere request of the Commission on Car Service. Probably the requirements have been tempered so as to equalize the expense of sending the empty cars but now the director, if he sees fit, could pick out one route to move empties out of the congested district."

In reply to a question by Senator Poindexter as to why this abnormal movement of empty cars was necessary, Mr. Hall described how currents of traffic have been changed and how the amount of freight exported through North Atlantic ports has been out of all proportion to that moved by the South Atlantic and Gulf ports.

"Was there anything to prevent the government from ordering traffic moved via the Southern ports without taking over the railroads?" asked Senator Poindexter.

Mr. Hall replied that the government control of the roads would not affect this situation, which has been caused to a considerable extent by the fact that the boat lines preferred the ports which gave them a shorter race with the submarines. He also explained that the railroads have handled a greater volume of traffic then ever before and that congestion has been increased by abuse of preference orders.

Senator Cummins asked to what extent the railroads have indicated a willingness to sacrifice selfishness and individual interests to the common good.

"I should not call it selfishness but rather a sense of duty toward their employers," said Mr. Hall, "but there have been many instances in which they have done so as far as they reasonably could. The first thing the Pittsburgh committee did was to order off the Pennsylvania Broadway Limited, although the New York Central was allowed to continue its competitive train." He also mentioned the diversion of traffic and the transfer of locomotives from the western lines to the east at a time when a locomotive is not only worth twice as much as formerly but has an earning capacity even greater.

"If the railroads could have divested themselves of their selfish interests, could they have got along without government operation," he was asked.

"Yes, that was indicated by the commission's report, but not without a repeal of the laws," replied Chairman Hall.

Senators Poindexter and Kellogg, who made it clear that they did not consider it necessary for the government to take over the roads, asked many questions as to why the President could not have remedied the abuse of preference orders under the powers he already possessed.

Preference Matter Must be Simplified

"Is there any reason to believe that the preference matter will be simplified?" asked Senator Kellogg.

"It should be immensely simplified," replied Chairman Hall. "The government has learned by experience and I understand that a change is already contemplated. There were many bureaus each undertaking to direct that their own shipments should have preference and when you try to single out cars for preference it tends to produce congestion and delay the entire movement. These orders probably didn't seem unnecessary to those that issued them but seem unnecessary to those who didn't issue them. I think now that the government appreciates the necessity for a change."

"Then the congestion is due to the fact that the President allowed various departments to issue these orders rather than to any lack of power to remedy the situation before?" said Senator Kellogg.

"I don't wish to criticise anyone. You can draw your own inferences," said Chairman Hall.

"Do you believe the government can operate railroads any more efficiently and economically than private enterprise?"

"In normal times, no; I believe under present conditions it can do so more efficiently, because the organization and men will be retained and they will have an opportunity to disregard the restrictions heretofore imposed upon them. As to economy, that will depend on the men who operate them."

"Why couldn't the government direct the roads to operate as a unit?"

"That was one of our recommendations," was the reply.

Mr. Hall expressed the opinion that possibly the existing facilities and equipment will suffice for the immediate present, but that later replacements will be necessary. He thought that the necessity for capital expenditures would be "very much less than the estimates one frequently hears" and that perhaps none will be needed right away.

Chairman Hall continued his testimony on Monday and the hearing at once became involved in a maze of statistical technicalities when Chairman Hall tried to explain to Senator Cummins the exact meaning of the terms "railway operating revenue," "railway operating income" and "net income" as used in the statement of statistical information compiled by the commission in response to requests by the committee. The committee apparently desired comparable statements showing the amounts which the railroads had available for the payment of interest and dividends over a series of years and the amount of their stocks and bonds, but the questions had not been asked in such a way as to bring out just what the committee wanted. The commission's statistician, M. O. Lorenz, who was finally called in, arranged to supply the material as quickly as possible. It was explained that one of the questions asked by the committee would require the services of 150 men for three or four months to compile, but the commission had given a rough estimate instead. Senator Watson asked Chairman Hall if he would agree with the statement of the railroads that they had co-ordinated their lines in a single continental system.

"Well, I should not express it in just that way," replied Chairman Hall. "If there were but one system all purchases would have been made in common, for instance, and as long as each railroad was obliged to earn its own living it is not, to my mind, conceivable that they could have been operated as a single system under one management without the repeal of the anti-pooling law."

"Then the principal result of the new plan of government control is that it gets away from the effect of the laws," said Senator Watson. "Could the railroads not have been run as successfully under their own management if the laws had been repealed?"

"I think the commission's report speaks clearly on that point," replied Chairman Hall, "but as a war measure, control of the railroads by the President presents certain advantages."

"If it is good as a war measure, why would it not be a good thing as a general policy?" asked Senator Townsend.

"We have yet to see what the result will be," replied Chairman Hall. "I have not let my thoughts dwell on the idea of government ownership. There are a number of elements which exist in ordinary times which do not enter into the problem in war time. That would be a very different question and would require study from a different angle of approach. Many problems would be involved that are not now, such as the political problem, and I do not understand that the President would have any such powers in time of peace as he has now."

Movement of Coal

Senator Pomerene tried to bring out reasons why the Interstate Commerce Commission or some organization had not done more to promote the movement of coal. He cited a case where a plant at Alliance, O., had been closed down almost in sight of many cars of coal which had stood on the tracks for weeks because the terminals to which they were destined were blocked. Chairman Hall replied that neither the Interstate Commerce Commission nor the carriers had authority to deliver the coal to any one but the consignee to whom

it had been ordered and that the prime emergency had seemed to be to move lake cargo coal to the northwest while it could be moved by water.

"Many users of coal," he said, "have neglected to order it or if they have ordered it, the Fuel Administration has ordered it turned over to someone else. It is far from being a matter of merely car supply and movement." As a remedy he suggested the plan proposed by the railroads in November by which the country would be divided into zones or districts and coal sent from the mines by the most direct routes to points in the districts, to avoid crosshauling.

Senator Poindexter also referred to the congestion of freight cars in the vicinity of large cities because consignees would not unload them promptly and asked what the commission had done in that respect. Chairman Hall said that the commission is dealing with that problem every day and Commissioner McChord said that two inspectors of the commission were at work in the Washington yards.

Chairman Hall said that the commission had shortened the free time allowed for loading and unloading and increased the demurrage rates for the purpose of penalizing detention of cars, but that thousands of cars of freight had been sent to destination before any arrangements had been made to handle the freight on arrival and had, therefore, clogged the tracks and delayed the movement of other shipments of great urgency. He also said that contractors for cantonments had been indifferent to the matter of demurrage charges because they were paid on the basis of cost plus a percentage.

Mr. Hall was followed by Commissioners McChord and Clark. "Isn't it a fact," asked Senator Kellogg, "that the President had all the power necessary without taking over the roads?"

"I don't think so," replied Commissioner McChord. "Do not understand me to say that the railroad men haven't tried. They have, but they couldn't get away from the competitive influence, which has become second nature with them, nor from their duty to their stockholders."

"If this is a good thing now, why would it not be a good thing in time of peace?" asked the Senator. Mr. McChord replied that there would not be such need for it in time of peace, that the railroads are not so crowded in ordinary times as now and that now the essential thing is to move the freight, economy being a secondary consideration. He said he thought the roads now have sufficient equipment but probably not enough locomotives. Referring to the preference orders he said: "Railroading is a pretty delicate operation with three or four government bodies tinkering with it and each without knowing what the other is doing."

Commissioner Clark outlined at some length the work done by the Railroads' War Board, of which he was an ex-officio member, to increase railroad efficiency. He said the efforts of the railroads had never extended beyond what they could do within the law. He said he would be surprised if it is not found that the existing equipment and tracks are ample to handle the business but he would also be surprised if it is not found that new locomotives are needed, because many of those now in use have got to be shopped soon. Regarding the causes of the congestion Commissioner Clark said it has been apparent for a year that more freight should be routed via the southern ports, and the railroads have endeavored to divert freight in that direction as much as they were able, but the boats preferred the North Atlantic ports and the matter was beyond the control of the roads and largely beyond that of the government.

Commissioner Aitchison was to be heard on Wednesday, and then the railway executives.

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The Officers Who Commanded the Engineers Who Fought at Cambrai

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Canadian Railway Troops Passing Through the Ruins of a Town After Laying the Track

Erie Employees Participating in New York City Liberty Loan Parade. Copyright, Press Illustrating Service.

Railway Employees Subscribed For $36,000,000

Subscriptions to the Second Liberty Loan by Railroad Men Almost Double Those to First Loan

MENTION OF THE HIGH SPOTS in railway history for 1917 must not fail to include the subscriptions by companies and employees alike to the first and second issues of the Liberty Loan. The railways themselves subscribed about $50,000,000 to the first loan and nearly $80,000,000 to the second. Reports just made public by the Liberty Loan Committee on Railroads, of which A. H. Smith, president of the New York Central, is chairman, show in addition that subscriptions to the second loan by railway employees totaled $36,077,450, that amount being subscribed by 396,958 employees. As 241,280 employees subscribed $20,027,966 to the first loan, this means that the railway companies and employees together subscribed over $70,000,000 to the first and $116,000,000 to the second, a total of $186,000,000 for the two issues.

In a letter sent out by the Liberty Loan Committee on December 22 to the railway presidents who co-operated, the railway men are thanked for their efforts and the hope is expressed that the committee may anticipate "your continued co-operation in behalf of similar issues by the government." The detailed figures sent out by the committee are as follows:

	1st Liberty Loan		2nd Liberty Loan	
	Individ.	Amount	Individ.	Amount
Abilene & Southern	23	$65,500	No report	
Akron, Canton & Youngstown	...	...	59	$3,750
Alabama & Vicksburg	...	36,000	358	48,750
Arizona & New Mexico	...	...	31	4,000
Arkansas Central	...	...	35	2,500
Atlanta, Birm. & Atlantic	...	20,400	No report	
Atlanta & West Point	200	25,000	No report	
Atlantic Coast Line	1,819	729,350	1,431	503,600
Atch., Topeka & Santa Fe	6,827	714,050	9,840	979,050
Augusta Southern	5	450	No report	
Aurora, Elgin & Chicago	...	...	236	19,000
Baltimore & Ohio	4,940	397,300	6,496	501,800
B. & O. Chi. Terminal	89	8,050	626	37,800
Bangor Aroostook	455	40,550	...	15,600
Boston & Maine	6,222	322,250	3,464	320,000
Buffalo & Susquehanna	99	49,150	199	38,550
Buffalo Creek Railroad	122	7,850	167	6,800
Buffalo, Roch. & Pittsburgh	3,390	275,650	1,738	128,250
Carol. Clinch & Ohio	695	57,400	No report	
Central of Georgia	...	63,150	1,366	116,500
Central R. R. of N. J	1,050	87,900	2,180	138,050
Central Vermont	725	45,000	No report	
Charles City Western	...	...	11	26,500
Charleston & W. Carolina	191	16,950	117	13,250
Chesapeake & Ohio	3,500	350,000	3,525	293,000
Chicago & Alton	...	11,650	...	250,000
Chicago & East Illinois	475	50,000	2,361	165,100
Chicago & North Western	1,776	128,250	2,306	139,150
Chicago, Terre Haute & S. E.	...	...	105	15,050
Chicago & West Indiana	427	38,150	1,447	93,050
Chicago, Ind. & Louisville	163	21,500	325	35,250
Chicago, Burl. & Quincy	1,424	152,960	13,131	966,500
Chicago Great Western	...	75,000	1,779	124,150
Chicago, Milwaukee & St. Paul	2,090	217,000	5,271	358,000
Chicago, St. Paul, Min. & O.	...	44,450	1,205	76,700
Chicago, Ind. & Western	211	25,000	No report	
Cincinnati, Ind. & Western	...	...	323	22,850
Colorado Midland and Colo. & So.	...	...	70	4,100
Copper Range	...	...	113	10,250
Cripple Creek & Colo. Springs	...	...	10	800
Cumberland	...	...	14	2,650
Cumberland & Penn'a	...	...	89	6,350
Delaware & Hudson	7,367	510,200	18,250	1,141,750
Delaware, Lack. & Western	16,886	1,091,336	17,671	1,071,500
Duluth, So. Shore & Atlantic	...	...	...	325,000
Denver & Rio Grande R. R. Co. } Rio Grande Southern R. R. Co. }	...	...	1,065	107,100
East Tenn. & W. N. Carolina	...	12,800	77	16,950
Elgin, Joliet & Eastern	...	...	...	200,850
El Paso & So. Western	...	...	...	100,000
Erie	14,103	1,005,870	15,610	1,097,000
Florida East Coast	436	49,850	758	63,450
Fort Smith & Western	...	19,200	187	12,400
Georgia & Florida	45	4,000	...	...
Georgia Railroad	375	56,900	...	...
Grand Rapids & Indiana	...	...	1,772	127,250
Great Northern	1,850	153,650	4,321	480,700
Gulf, Mobile & Northern	...	30,000	4	250
Hocking Valley	150	30,000	1,669	138,300
Illinois Central	596	61,900	4,356	368,400
Internatl. & Gt. Northern	...	...	...	32,400
Interstate R. R.	...	...	102	7,500
Kansas City Terminal	...	...	1,001	62,300
Kansas City Northwestern	...	...	61	4,500
Kansas City Southern	931	104,750	1,180	94,750
Lakeside & Marblehead	...	3,000	...	...
Lehigh & Hudson River	...	...	254	27,300
Lehigh & New England	...	...	348	24,000
Lehigh Valley	9,768	701,050	9,915	625,650
Linville River	(Combined with East Tennessee & Western N. C.)			
Long Island	...	...	2,293	220,050
Louisiana & Arkansas	157	...	No report	
Louisville & Nashville	5,654	490,200	6,433	521,050

	1st Liberty Loan Individ.	1st Liberty Loan Amount	2nd Liberty Loan Individ.	2nd Liberty Loan Amount
Maine Central	108	27,750	62	4,250
Maryland & Penna.	...	...	51	3,650
Merchants Desp. Transportation Co.	...	...	260	21,000
Minneapolis & St. Louis	...	60,000	1,310	104,900
Minn., St. P. & S. S. M.	913	90,150	...	658,000
Missouri, Kansas & Texas Lines	...	...	6,542	490,500
Missouri & N. Arkansas	107	9,350	440	50,000
Missouri, Ok. & Gulf	68	5,200	No report	
Missouri Pacific	300	19,000	16,899	1,391,300
Missouri Southern	...	...	22	311,000
Montana, Wyoming & Southern	...	...	4	500
Montour Railroad	...	...	69	5,350
Muscatine, Burl. & Southern	...	...	11	900
Nashville, Chatt. & St. Louis	1,399	119,000	950	95,400
Natchez & Southern	...	5,000	8	600
N. J., Ind. & Illinois	...	...	16	3,000
New Mexico Central	50	2,450	No report	
Nevada-California-Oregon	...	500	No report	
New York Central R. R.	19,312	1,345,150	20,894	1,343,050
Boston & Albany	860	66,300	471	32,200
Michigan Central	4,448	335,950	3,621	264,450
C. C. C. & St. L. Ry.	2,448	192,200	5,668	389,100
Cincinnati Northern	137	14,800	72	5,600
Lake Erie & Western	706	51,300	775	53,300
Toledo & Ohio Central	269	22,850	998	70,450
Kanawha & Michigan	86	10,550	287	21,500
Pittsburgh & Lake Erie	435	28,600	No report	
Indiana Harbor Belt	327	29,100	498	30,400
Total New York Central Lines	29,028	$2,096,800	33,284	$2,210,050
New York, Chicago & St. Louis	1,525	115,500	1,678	117,350
New York, New Haven & Hartford	327	26,950	242	21,700
New York, Ontario & Western	207	21,250	1,548	120,000
Norfolk & Western	2,074	251,800	3,575	364,000
Northern Pacific	1,358	116,000	7,968	929,300
Northwestern Pacific	...	...	500	51,000
Ogden, Logan & Idaho Ry. Co.	...	...	85	6,200
Oregon, Washington Ry. & Nav.	...	...	2,883	243,850
Pacific Electric	2,335	180,400	2,817	254,750
Pacific Coast	...	...	58	4,900
Pennsylvania Railroad	52,510	3,378,350	124,789	9,243,500
Pennsylvania Lines	6,220	597,200		
Pere Marquette	974	...	1,735	115,900
Philadelphia & Reading	5,588	398,450	8,393	566,800
Pittsburgh & Shawmut	39	5,600	158	30,000
Pittsburgh, Shawmut & Northern	...	...	110	205,400
Portland Ry. Light & Power	...	...	151	10,900
Quanah, Acme & Pacific	53	5,300	No report	
Richmond, Fredericksburg & Potomac	222	14,500	387	54,650
Rutland Railroad	563	43,300	660	74,200
St. Louis-San Francisco	718	131,150	9,102	562,250
St. Louis, San Fran. & Tex. / Ft. Worth & Rio Grande / Brownwood, North & South	...	...	367	21,300
St. Louis Southwestern	744	63,900	...	100,000
St. Paul Gt. Northern (Off. Bldg.)	...	...	...	2,850,000
San Antonio & Arkansas Ry. Co.	...	...	495	46,000
San Francisco-Oakland Term. Rys.	...	...	278	18,450
San Joaquin & Eastern Ry.	...	...	37	7,400
South Buffalo	169	12,900	342	29,850
Southern N. Y. Power & Ry. Corp.	...	...	72	6,500
Southern Pacific	13,168	1,319,000	11,976	1,191,200
Southern Railway	4,343	293,850	No report	
Spokane Internatl.	...	...	123	9,700
Spokane, Portland & Seattle	...	60,100	781	67,400
Terminal R. R. of St. Louis	766	52,950	2,006	141,500
Toledo, Angola & Western	...	...	17	850
Toledo, Peoria & Western	118	18,400	...	20,000
Toledo, St. Louis & Western	...	...	191	115,550
Toledo Terminal	46	2,250	50	3,000
Texas & Pacific	1,296	99,100	787	62,600
Tonopah & Goldfield	...	...	14	68,500
Ulster & Delaware	146	12,100	205	16,800
Union Railway	...	...	192	12,850
Union Pacific System	15,693	1,626,650	3,071	479,850
Ursina & North Fork	...	...	5	500
*Vicksburg, Shrev. & Pacific	638	58,650	No report	
Virginian	128	8,300	No report	
Virginia & Carolina So.	...	...	...	3,150
Wabash	670	67,200	205	26,450
Wadley Southern	...	100	No report	
Washington Western	...	...	8	1,000
Weath. Mineral Wells & Nor.	18	900	No report	
Western Maryland	1,108	69,500	315	22,750
Western Pacific	346	120,600	574	58,150
Wheeling & Lake Erie	...	20,000	411	28,450
Wrightsville & Tennille	...	...	10	3,650
Totals	241,280	$20,027,966	396,958	$36,077,450

* Second Liberty Loan Report included with Alabama & Vicksburg.

Canada's Victory Loan

All the honors in government loans did not rest with the American railways and railway men in 1917. Canada also has just finished raising $400,000,000 in an attempt to raise only $150,000,000. The Canadian railways like the railroads in the United States took a big part in securing the splendid final result. The Canadian Pacific took $5,000,000 of the bonds, and Lord Shaughnessy promised that should a figure of $300,000,000 be reached, the company would take an additional $5,000,000, which promise has since been kept. The Grand Trunk and Canadian Northern, as well as several other of the larger companies completed arrangements whereby their employees were enabled to take up bonds by paying for them on the instalment plan, the companies to look after the payments as they become due, and the employees signing agreements permitting the deduction of such payments from their wages.

Other bulk subscriptions were made by railway officers and supply companies as follows: Canadian General Electric Company, $3,155,000; Dominion Steel Corporation, $3,000,000; R. W. Leonard, formerly chairman, National Transcontinental Railway Commission, $300,000; Sir Herbert Holt, director, Canadian Pacific, $270,000; Canadian Locomotive Company, $250,000; Sir Augustus Nanton, director, Canadian Pacific, $250,000; Dominion Bridge Company, $250,000; Lord Shaughnessy, president, Canadian Pacific, $100,000, and R. B. Angus, director, Canadian Pacific, $100,000.

The Coal Situation

THE SENATE COMMITTEE on Manufactures on December 26 took up its investigation of the shortage of coal authorized by a Senate resolution. The first witness was Dr. Harry A. Garfield, United States Fuel Administrator. He told the committee he did not believe the coal shortage could be relieved until the government took over control of the railways and centralized their management, and that under present conditions of railroad congestion the production of more coal would simply add to the difficulty of the railroads in handling it. He thought that by a greater co-ordination of railroad facilities their efficiency could be increased, but that legal obstacles have heretofore interfered with such co-ordination. Dr. Garfield also made public a letter which he had written to Judge Lovett, government priority director, on December 24, urging a modification of Priority Order No. 5 to give increased preference to the movement of coal, and the return of open top cars to the mines. "In view of the apparent ineffectiveness of efforts thus far made to relieve the congested condition of transportation and of urgent requests coming from all sides," he thought such an order properly guarded would in all probability bring relief.

"No one familiar with the railroad situation," he said, "will seek to place all the blame for the present difficulty upon the railroad officials and it is far from my desire to shift responsibility from the Fuel Administration to any other; but so long as present transportation conditions prevail (I refer to both physical and legal restrictions) the Fuel Administration cannot be held to account for results which in all likelihood might be avoided if coal were given such right of way as that indicated in the enclosed suggestion until the present congestion is overcome."

Dr. Garfield said further that Priority Order No. 5 had accomplished nothing in this direction and that about 50 per cent of the cars now blocking the railroads are laden with coal. The elimination of unnecessary cross-hauling is being vigorously pushed and will accomplish, "as far as I am able to accomplish it unaided," the desired result. In an order issued on that day he had prohibited contracts involving this objectionable practice, but the benefit of this effort depends in a large degree upon clearing up congested points and the free movement of coal. Dr. Garfield's suggested modifications of the priority order would provide that during a period of 60 days, unless otherwise ordered, preference and priority as far as practicable should be given to the movement of coal and coke regardless of the purposes for which they are to be used, and to the return of all empty cars to the coal mines and coke ovens and that preference and priority in car supply also should be given when requested by

the United States Fuel Administration and authorized by the priority director in any special instance.

Dr. Garfield also said in part:

"We are now putting into effect plans which will place the entire coal industry on a war basis. These plans will be wholly effective beginning with April 1, 1918, when the present coal year will come to an end.

"In this connection, the Fuel Administration is establishing a zone system of distribution. Under this zone system the output of a given coal field will be assigned generally to a given consuming territory. It will be arranged that the producing field and its consuming territory shall be connected by the shortest possible transportation distance. This will eliminate, so far as possible and practicable, all cross-hauling.

"In order that in 1918 the whole coal output, including the coal which the mines had contracted to deliver, shall be under the direct and effective control of the Fuel Administration, an order has been issued regulating the terms of all contracts for the future delivery of coal. The order makes it plain that all contracts for the sale of coal or coke are subject to cancellation by the President or by the Fuel Administration acting by his authority.

"The order limits contracts by providing that no contract shall call for the delivery of coal or coke over a period of longer than one year, and the order directs that the year period thus allowed shall terminate not later than 18 months from the date the contract is made. Contracts must be placed at the prices fixed by the President and the Fuel Administration, and must provide that the coal or coke affected by the order is subject at all times to requisition or diversion by the Fuel Administration.

"Contracts made under this order will not be recognized if they involve 'Railroad cross-hauling of coal, except in the case of gas coal or coal to be used for by-product purposes.' This provision will eliminate one of the transportation difficulties now confronting the Fuel Administration, and will insure the movement of coal from mine to consumer along the shortest possible transportation lines."

Accomplishments of the Railroads' War Board

Report to Senate Committee Tells Also of What It Had Hoped to Do and of Its Obstacles

WHAT THE RAILROADS' WAR BOARD has already accomplished in stimulating American railroads to greater efficiency and to cut out unnecessary competitive practices, some things it had hoped to accomplish, and the difficulties that have hampered the railroads in their efforts to secure greater transportation output were outlined in a report to the Senate Committee on Interstate Commerce, by Fairfax Harrison, chairman of the Railroads' War Board, in reply to questions asked by the committee.

The committee asked regarding the increase in traffic being handled and as to "what changes of administration have been adopted within the past year to relieve congestion of freight and increase the efficiency of the railroads, and what further changes in methods of administration would you suggest?"

The railroads had already co-ordinated their activities before their taking over by the government and for eight months have been operated as a unified continental system, said Mr. Harrison, and the *increase alone* in traffic handled by the railroads in 1917 as compared with that of two years ago has been over 135,000,000,000 ton miles, or substantially equal to the combined total traffic for a year of the railroads of Canada, Germany, Great Britain, Russia, France and Austria. In the first six months after we entered the war, he added, the railroads handled as much freight traffic as they did in the entire year 1906.

Some of the things the War Board had done were described in part as follows: Some of the statistics are omitted because they have been published in these columns heretofore.

Some Things the War Board Has Done

1. Formulated probably the most satisfactory car service rules which the railroads have ever had. Arranged at once to pool box cars so that they circulate as freely over the United States as bank notes, and thereafter arranged to pool coal-carrying cars to promote their equally free circulation and to transfer locomotives from one line to another to meet unusual traffic requirements.

2. Established the most cordial and co-operative relations with commercial bodies, individual shippers, state railroad commissions, manufacturers' associations, etc., through the organization of six departments coextensive with those of the army and 33 subcommittees of the commission on car service covering the entire United States.

3. In conducting an active campaign for the conservation of facilities through intensive loading of cars, locomotives, etc.

Efficiency of the plant has been increased in every direction. The number of freight locomotives in service has been increased by greater speed in repairing in order to reduce the time in shops. The same result has been accomplished as to freight equipment. Tons handled per car and per train have increased, as have the average miles run per locomotive and per car per day. The resultant effect of all of these economies is shown in the 1,094,800 ton-miles handled per month per locomotive, an increase of 16 per cent, for the six months ending September 30, 1917, and the 14,670 ton-miles handled per freight car, in the same period—an increase of 14.2 per cent—in each case over the preceding year. In effect, this added 4,897 locomotives and 339,427 freight cars to the equipment of the carriers. Two thousand eight hundred and forty locomotives and 141,475 freight cars on the average were ordered annually between 1907 and 1916; this additional equipment, therefore, was equivalent to the immediate delivery, without cost, of one year and nine months' locomotive orders and two years and four months' car orders.

Through the acquiescence of the public and the consent of state commissions, 28,656,983 unnecessary passenger train-miles have been discontinued, resulting in saving 1,800,000 tons of coal per annum, and the release of 570 locomotives and 2,800 train and engine men for freight service.

4. Developed a policy of relocating cars by ordering their movement empty. Since May 1 orders for moving 222,027 cars have been issued, of which 188,286 have been delivered off the initial lines. This change from previous policy is the most radical and far-reaching act that the committee has ever authorized. The movement has been very expensive to the roads that moved the empties, but all orders have been cheerfully and promptly obeyed.

5. Created the co-ordinating committee on exportations, whose function is to assemble information in relation to the

bottoms, both in port and in transit, available for export shipments, in order to divert traffic where necessary to prevent congestion and to expedite shipments. The committee consists of chairman of the Commission on Car Service, a special representative of the executive committee, together with representatives of the army, the navy, the Shipping Board, the Food Administration, the British Ministry of Shipping, and the traffic representative of the Allied Governments. This committee has regulated the movement of grain for export, reducing the number of cars required without blocking port facilities.

6. In collaboration with the Committee on Coal Production of the Council of National Defense it brought about the pooling of lake and tidewater coals, reducing the number of classifications from 677 to 97 of the former, and from 900 to 125 of the latter, which resulted in the much more expeditious movement of cars and vessels, and thereby conserved transportation.

Great anxiety prevailed throughout the summer and autumn for fear that the necessary tonnage of lake coal to the northwest and of ore from lower lake docks could not be moved before the close of navigation. These requirements have been satisfactorily met. These fears were inspired by alarming reports of shortage of coal published in many parts of the country. This shortage is due chiefly to the enormous increase in the demand for coal and to faulty distribution, and can not fairly be attributed altogether to lack of transportation. The railroads have not been able at all times to carry all the coal offered, but has any other industry responded more efficiently to the demands created by the war than these statistics show the railroads to have done? And the railroads have accomplished what they have under the greatest difficulties, which we shall mention in detail hereafter. The coal problem is not, as has been represented, altogether one of transportation. It is primarily a problem of distribution, for which the public must share the responsibility. The present system of distribution involves a great amount of cross-haul of coal, and a resulting large waste of transportation. The remedy, which doubtless requires surrender of convenience and old habits, is clear; it is to cause coal to be supplied to every section from the mines nearest that section. No one unacquainted with the facts can conceive the unnecessary long hauls of coal which have grown up under the right of the shipper to route his coal as he pleases. Whatever may have been the justification for it in normal times, this practice effectually reduces the efficiency of the transportation facilities in the time of the heaviest traffic ever experienced.

7. It has recommended to the Food Administrator to transfer the movement of foodstuffs and other export material to southern and Gulf ports to as large a degree as compatible with public interest in order to relieve the congested eastern territory of an equivalent amount of train service. The recommendation was put in effect at once.

8. In conferences with the Priorities Committee of the General Munitions Board it has taken steps to expedite material that is required in the construction of locomotives and cars.

9. It has arranged for the great simplification of the accounts relating to government transportation, which greatly expedites the movement of government freight, and for a central accounting bureau through which the centralization of all transportation accounts against the government are to be handled.

10. It has submitted to the War Department a simplified basis for military war tariffs and forms of waybilling and assessing freight charges on Army impedimenta.

11. It has prepared designs for armored cars and special equipment for hospital and troop train service, and has arranged to build sample cars for them.

12. It has prepared complete routing charts for the use of the government in moving troops between military posts and to mobilization points, cantonments, and points on the Mexican border and Atlantic and Gulf ports, whereby 2,052,418 troops have been moved to date in 36,735 passenger and 10,640 freight cars, assembled in 3,603 special trains.

13. It has devised great simplification of accounts and has systematized settlements between the government and carriers, eliminating large volumes of correspondence and red tape. Under these simplified plans the accounting for the movement of troops and thousands of cars of their impedimenta has been handled without friction or interference with the ordinary business of the carriers.

14. It has created a subcommittee on express transportation, composed of the vice-presidents of the American, Wells-Fargo, Adams, and Southern express companies, to co-ordinate the work of their companies with the general problem of transportation.

15. It has moved 134,653 cars of building material and supplies to cantonments for the government and 10,282 cars for account of the United States Shipping Board, a total of 144,935 cars.

Things the War Board Had Hoped to Do

Some of the things the board had hoped to accomplish were as follows:

1. To abolish cross-haul of coal. The attention of the Fuel Administration was directed on November 22 to the great importance of making a survey of present contracts and methods of purchases and shipment of coal, so as to shorten the rail haul from mines to consumers and to eliminate as far as possible all cross-hauling of coal by the railroads. This recommendation, accompanied by a plan following that devised in England for the same purpose, carefully worked out under the direction of the War Board, was repeated on December 19, and if carried out will greatly reduce unnecessary car mileage and promote the free movement of coal to an incalculable degree.

2. To remove a fruitful cause of congestion by securing co-ordination of government shipping agencies. A method of notifying railroads of the necessities of the several departments of the government, by means of certified car orders and a special waybill envelope, was inaugurated. The indiscriminate application of this system to many shipments not entitled to preference is largely responsible for the congestion of the eastern trunk lines, one of the most important of which finds that 85 per cent of its entire traffic is covered by preference envelopes. To relieve the congestion it has been necessary to suspend the operation of this plan pending action on the War Board's recommendation that a government traffic director be appointed, who shall co-ordinate all agencies of the government concerned with the shipment of freight, determine to what, if any, preference in movement they are entitled, and prevent conflicts in priority by routing all commercial as well as government freight.

3. To produce greater improvement in the loading of freight cars. Much has been made, but much more is attainable. The loading of grain in bulk has been notably bad, but the effect of assistance promptly given by the Food Administrator is already showing results. Present reconsignment privileges should be curtailed and charges therefor increased. This privilege has been the cause of vexatious delay in movement and unloading of equipment; great increases in the daily car movement of coal as well as other commodities can be secured by curtailing and penalizing the privilege, which, however, can be done only if and when approved by the Interstate Commerce Commission. The matter has also been taken up with the Fuel Administration. A reduction in free time allowed to unload cars before demurrage attaches and rapid, progressive increase in demurrage charges will greatly improve car movement and supply. Experience on the Pacific coast, where these measures have been adopted, proves the

adequacy of the remedy. The co-operation of the public that was there secured should be obtainable elsewhere.

4. To curtail passenger travel greatly by imposition, through the appropriate agencies, of sufficiently restrictive rates.

5. To increase the common use of terminals of one carrier by another. The common use of terminals and running tracks under trackage contracts is by no means uncommon, and under the stress of threatened congestion the principle is being urged and increasingly used.

6. To interest federal authorities in the paramount necessity of providing and conserving railroad labor, which we refer to hereafter in greater detail.

Difficulties That Have Hampered the Railroads

The report added:

We have shown what the War Board has done and what it hopes to do; it is not out of place to mention some of the obstacles in the way of securing greater transportation output.

1. The difficulties presented in handling a movement of freight exceeding by far anything ever experienced were greatly increased by the call to move over 2,000,000 troops, and thereafter to meet the demands created by their absence from home for facilities to visit their families and to permit their families to visit them. This stimulus and that of unparelleled industrial activity have steadily increased passenger traffic, which showed an increase of 23 per cent in October this year over last. The latest data available show increases of 6 per cent and 14 per cent, respectively, in mail and parcel-post traffic (years ended June 30, 1916 and 1917), and 20 per cent in express traffic (nine months of calendar years 1916 and 1917).

2. The serious congestion on eastern lines caused by the abuse of waybill preference envelopes by government agents has already been mentioned.

3. The railroads have not motive power enough. Approximately 3,400 locomotives and 33,000 cars are still under order, the delivery of which has been deferred for military reasons. The national government, recognizing its duty to its allies, determined that it was more necessary, first, that the needs of railways in France, which were to be used by our troops, for 2,331 locomotives, should be taken care of; second, that certain requirements of the British, for 296 locomotives, should be protected; and, third, and most of all, that Russia's requirements, for about 1,600, must be filled. We were told that we must take care of the transportation needs of Russia, and every energy was bent on that, and we were deprived of our locomotives and cars. Many of the 3,400 locomotives still undelivered were ordered by the eastern trunk lines now suffering so severely from congestion, for whose immediate relief 125 locomotives were drafted by the war board, not from lines that could spare them—because there are no lines in this condition today—but arbitrarily from lines outside the congested area. Our railroads, however, are determined to deal with their problems as best they can and get the largest use out of existing plant. We repeat what our executive committee has said publicly, that we believe the American railroads are getting as much service out of the existing plant as is possible by any form of management. There are, of course, more things we can yet do to increase efficiency and public service. These things we hope to do, with the assistance of our associates; we have not had a failure of co-operation by any railroad in the country. The support which we have had has been all that could be given under the most strict government control. We have had the support of shippers and receivers of freight, of commercial bodies, manufacturers' associations, and state commissions.

4. (*a*) By the impressment of steamships engaged in Atlantic coast traffic, of the Southern Pacific Co., Ocean Steamship Co., and Mallory and Clyde Lines, the railroads have been called upon to transport 962,000 tons of freight, in the last half of the calendar year, which heretofore has been transported by water.

(*b*) The New York, New Haven & Hartford, Boston & Albany, and Boston & Maine,, serving New England, have actually transported 2,817,000 tons more anthracite and bituminous coal into New England this year than last, in response to the needs of that part of our country that heretofore have been supplied by ocean carriers plying between New York, Philadelphia, Baltimore, and Hampton Roads and New England points.

(*c*) During the first year's operations of the Panama canal (September, 1914, to August, 1915, inclusive), 2,060,000 tons of freight were handled between Atlantic and Pacific ports of the United States. The vessels handling this traffic were attracted by bids for ocean bottoms in the trans-Atlantic trade at substantially any rate the owner might demand, and with the exception of about 70,000 tons of coal carried by United States Government in its own vessels, the 1916 traffic of the canal was negligible, and continues so; therefore the transcontinental railroads were obliged to furnish facilities to handle substantially all of the 2,060,000 tons above referred to without taking into account the large but unknown increase of traffic following the entry of the United States into the war. To move the above tonnage is equivalent to the constant monthly use during 1917 of 46,200 freight cars and 619 locomotives, or to the entire present freight traffic on about 5,000 miles of line.

5. The railroads are finding it increasingly difficult to keep their equipment, and particularly their locomotives, in proper repair and efficient condition, on account of the shortage of skilled labor. The selective draft and the attractions offered by such rates of pay in munition and government plants as most of the roads are financially unable to meet has resulted in a depletion of the shop forces of the carriers, some reporting a shortage in numbers of as much as 12½ per cent, and all reporting a much greater fall in efficiency due to the necessity of recruiting with unskilled men. The War Board has publicly called attention to these matters and has also suggested to government agencies possible measures of relief, which so far have not been granted. It should not be forgotten that the increased movement of passengers, troops, mail, parcel post, and freight has been acomplished with forces greatly depleted as to number and weakened as to efficiency.

Use of Priority Order

Regarding the extent of the use of priority orders of shipments, and its effect on traffic, the statement said:

The use of requests for priority in car supply and movement has been very general for the past six months or more on the part of the Army, the Navy, and the United States Shipping Board. The original plan contemplated that the Commission on Car Service should be furnished with copies of all such requests, but the method of handling, especially by representatives of the Army, has been lax, and it is believed that there were a great many such requests made on the railroads, direct copies of which never reached us. Furthermore, much of the movement represented by these requests extends into the future, so that it is not possible to make any figures that would fairly represent the volume of traffic that has been handled by the railroads in compliance with requests for preference. It is proper to state that the careless manner in which preference requests have been handled heretofore has now been corrected.

As stated above, however, the blanks for the purpose were used freely and the volume of traffic handled in this manner was undoubtedly large; but it is impossible to state in figures what effect this has had on the movement of other traffic.

The foregoing relates to preference shipments for the United States Government. Added to this have been shipments for the allies, amounting to many thousands of cars, which have been given a degree of preference by special order.

L. E. Johnson and N. D. Maher

PRESIDENT L. E. JOHNSON, after 20 years with the Norfolk & Western, has retired, and N. D. Maher, vice-president for the last 10 years, has been elected president. When Mr. Johnson went to the Norfolk & Western as general superintendent the company had come through a receivership and Henry Fink was president. In the first nine months of operation the new company earned a margin of less than $500,000 over its fixed charges; in the calendar year 1916 the company earned $21,800,000 surplus above fixed charges. This is one of the really great achievements

L. E. Johnson

in the profitable development of a railroad property in the history of the United States. On the one hand there has been most remarkably conservative and successful financing of the company's needs, and on the other hand, a degree of foresight in the physical development of the property that has few parallels. Ranking almost in importance with these has been the development of an operating organization that has many of the good points of the Pennsylvania's, and greater flexibility.

The credit for these results belongs to Henry Fink, L. E. Johnson and N. D. Maher, and in a broad way also to beneficent and wise control by the Pennsylvania. Henry Fink, like his older brother, Albert, was a profound student of economics and especially of railroad problems. How far ahead of most of his contemporaries and of the statesmen at Washington he was is rather strikingly illustrated by a paragraph in one of his annual reports: "Experience has demonstrated that such regulations cannot be made effective so long as the Act to Regulate Commerce prohibits the apportionment or division of competitive traffic and the payment in money of any balance that may become due to the weaker transportation lines. It is hoped that the Congress at its next session will amend the Act to Regulate Commerce so as to permit the division of competitive traffic, improperly termed 'pooling.'" This was in 1897, the year in which Mr. Johnson came to the Norfolk & Western. It was therefore under the best kind of leadership that Mr. Johnson got his broader training. He had begun railroad work at the very bottom of the ladder, having been a locomotive fireman in 1866 on the Chicago, Burlington & Quincy. He worked up at first through the mechanical department, but after having become a master mechanic he went over to the operating department.

Mr. Johnson is a born fighter, overbearing opposition without hesitation, defending what he believes right with fearless determination; he is sure of his own opinions and has the courage of his convictions to an unusual degree. While some of the broader policies of financing and developing the Norfolk & Western were initiated by Henry Fink and approved of by the Pennsylvania controlling interests, the aggressive carrying out of these policies and execution of the development plans have been Mr. Johnson's.

After the death of F. J. Kimball, who had been made president when Mr. Fink became chairman of the board in 1902, and the election of Mr. Johnson to the presidency of the Norfolk & Western, his was the responsibility and initiative which drove the company on to its present success. He foresaw the need of terminals, of yards and of shops. Appreciating as fully as his contemporaries did the need for increased train loading, he correlated efforts in this direction with the development of terminals and yards. Under his direction the Norfolk & Western made a great financial success in the face of conditions which proved almost insurmountable to many American railroads.

Lucius E. Johnson was born at Aurora, Ill. He began railway work in 1866 as fireman on the Chicago, Burlington & Quincy and remained in the locomotive department of that

N. D. Maher

road until 1886, holding various positions, including that of master mechanic at Aurora. From 1886 to December 1, 1888, he was superintendent of the St. Louis division at Beardstown, Ill., and from December 1, 1888, to November 15, 1890, was superintendent of the Chicago division at Aurora. From November 15, 1890, to March, 1893, he was superintendent of the Montana Central Railway at Helena, Mont., and from March, 1893, to July 10, 1897, was superintendent of the Michigan division of the Lake Shore & Michigan Southern. From July 10, 1897, to July 15, 1899, he was general superintendent of the Norfolk & Western, and from July 15, 1899, to March 5, 1902, general manager.

From March 5, 1902, to September 30, 1903, he was vice-president and general manager, and from September 30, 1903, to February 1, 1904, president and general manager On February 1, 1904, he was elected president.

N. D. Maher is the man who has built up the Norfolk & Western's operating organization. This organization is the admiration of every railroad man who has studied it. For the combination of simplicity, effectiveness and *esprit de corps* it is almost unique. Even if Mr. Maher had never been elected president of the Norfolk & Western he would have built a monument to American railroad genius that will stand out in history. Mr. Maher knows the 2,000 miles of the Norfolk & Western, its officers and employees in minutest detail; as intimately as a creator knows his masterpiece. Although he has been vice-president for the last ten years only, he has been with the road even longer than Mr. Johnson, having been made chief clerk to the general manager in 1883. Years of service is not really an adequate measure in Mr. Maher's case, because we ordinarily think of a year as about 300 working days. During the last ten years Mr. Maher has lived day and night, day after day and week after week, out on the road. The standard of supervision he set himself was 100 per cent and he more nearly attained it than would have been possible for anyone with a less rugged physique.

Nicholas D. Maher was born at Blairsville, Pa. He began railway work in 1871 as a surveyor on the Pittsburgh, Virginia & Charleston. From 1873 to 1874 he was clerk in the office of the superintendent of transportation on the Pennsylvania at Altoona, Pa., and from 1874 to June 1, 1883, he was clerk in the general superintendent's office. From June 1, 1883, to August 1, 1889, he served as chief clerk to the general manager of the Norfolk & Western; from August 1, 1889, to August 3, 1890, as trainmaster of the Flat Top division; from August 3, 1890, to June 21, 1901, as superintendent of the Pocahontas division. On June 21, 1901, he was made general superintendent of the Seaboard Air Line at Portsmouth, Va.; but on January 3, 1903, returned to the Norfolk & Western as general superintendent. On February 1, 1904, he was made general manager, and from July 1, 1907, to November, 1912, was also second vice-president. In November, 1912, he was appointed vice-president in charge of operation.

The Shepherdsville Collision

THE REAR COLLISION of passenger trains on the Louisville & Nashville, December 20, killing 47 persons, was briefly reported in our last issue, page 1185. A full copy of the statement issued by the railroad company and published in the Louisville papers has since been received and from this are taken the following details which were brought out at Superintendent W. F. Sheridan's investigation. (The local train was No. 41, not No. 9, as given in our account.)

Train No. 41 left Louisville on time at 4:35 p. m. Train No. 7, the through passenger train for Nashville, due to leave at 3 p. m., did not depart from Louisville until 4:53 p. m. No. 41 made its usual local stops and arrived at Shepherdsville six minutes late. It consumed about two minutes in discharging its passengers. It then moved forward, that is, southward, until the rear coach was about 360 feet south of the station building. It here came to a stop for the purpose of backing in upon the siding to permit No. 7 to pass, and almost at that instant No. 7 swept by the station and into the rear of train No. 41. No. 7 plowed through the rear coach and half way through the second coach of No. 41 and shoved the wreckage forward a distance of about 800 feet. The flagman and conductor of No. 41 were in one of the coaches and both were killed. The engineer and fireman on No. 7 were unhurt. * * *

When No. 41 arrived at Brooks, a station five miles north of Shepherdsville, the conductor received information from the despatcher that No. 7 had passed F. X. tower at 5:08 p. m. and that if he could not get to Bardstown Junction on time he had better let No. 7 pass at Shepherdsville. As he was leaving Brooks, Conductor Campbell said to his train porter, Earnest Chase, "we are to let No. 7 by at Shepherdsville." At Gap in the Knob, a station between Brooks and Shepherdsville, the train porter asked Conductor Campbell if the engineer understood that he was to head in at Shepherdsville. * * * At Shepherdsville Conductor Campbell went into the telegraph office and himself telephoned to the despatcher at Louisville and was informed that No. 7 was close and that he had better get into the siding. Campbell came out of the office and told the train porter to inform the engineer to back into the siding for No. 7.

The porter ran forward and delivered this message to the engineer while the train was slowly moving off, and jumping upon the engine he rode it until he reached the south switch, where he alighted. He threw the switch. The effect of this was to display an additional red light to the north as soon as the train had passed the switch. The rear of No. 41 was not protected in any way by its crew as required by the rules, in that no fusee was put out or torpedoes placed between Gap in the Knob and Shepherdsville, though the train was failing to maintain schedule time; and in that no flagman with a red lantern was sent back at Shepherdsville.

After leaving Louisville train No. 7 was stopped one minute at Oak street and one minute at the Southern railway crossing and after that proceeded without any further stops until the collision. The line from Louisville to a point beyond Shepherdsville is double tracked, and trains move under standard American Railway Association rules.

In approaching Shepherdsville the track is straight for a mile and a half, except for one slight curve about half a mile north of the station, which, however, does not affect the view of the signals at the station.

Under the rules, it was the duty of the engineer of train No. 7 to approach the station with his train under control and not to pass it unless he received a "proceed" signal. This signal in the night is the changing of a red light to a green, and the approaching engineer must stop unless he actually sees this movement; that is, the change from red to green.

Upon this occasion the engineer, Wolfenberger, states that he saw the green signal in its then position when he was about 2,200 feet from the station, and that when he was about 1,800 feet from the station he sounded four short blasts, which was a request to the operator to indicate whether he must stop or proceed. The engineer states that he saw no change in the signal and admits that he knew that, not being moved in his presence, it was his duty to stop; but he thought that the signal to proceed would be given later, so he went ahead without taking any steps toward slackening the speed of his train, except that he applied the air brakes lightly. When he was within about 400 yards of the station, still observing that the signal had not been changed, he called again by sounding the four short blasts.

He says that at that time he saw the signal drop to red, and that he then applied his emergency brakes and thought that he closed or almost closed the throttle.

Upon the arrival of No. 41 at Shepherdsville, Operator Jesse Weatherford, as is customary, assisted the agent in handling the baggage, mail and express. He was working at this at about a distance of fifty-five feet from his office, and upon completing it started to return to his office when he met Conductor Campbell coming from his office and was told by him of his conversation with the train despatcher, and informed him that he, Campbell, was going to move up and back in on the side track to let No. 7 pass. Then

Weatherford proceeded to his office and when he had gotten within ten or twelve feet of it he heard the noise of No. 7 approaching, looked up and saw the train at a point about 800 feet north of the office. He at once rushed into the office and turned the signal to red, grabbed his red lantern and ran out, but too late.

The superintendent's committee reports its conclusions: that Conductor Campbell and Flagman Greenwell disobeyed the flagging rule; that Wolfenberger violated the rules in not approaching Shepherdsville prepared to stop before passing the semaphore signal unless he got a signal to proceed. "In approaching a station it is the duty of an engineer to absolutely stop his train before reaching the semaphore unless he receives an affirmative and positive signal that he may proceed. This signal to proceed is made in only one way —that is, there must be displayed a red light, which is changed into a green light, and this change must be made in view of the engineer. Upon this occasion the green light (which was the proper signal to be displayed in view of No. 41 standing at the station as it was) constituted a stop signal for Engineer Wolfenberger. * * * Rule 221-F requires that a fixed train order signal must never be passed if kept stationary, regardless of its position or the color it displays, without the cause being first investigated." Rule 221-D says: "Conductors and enginemen, when approaching train-order offices, must have their trains under control and must not assume that the signal will be changed from 'stop' indication when within the distance prescribed, as, if any portion of a train runs beyond the signal before it is so changed, an infraction of these rules will have been committed."

There was ample time and space, according to Wolfenberger's own statement, for him to have stopped his train, not only from the time he first saw the signal, but also from the time when he called for a change and did not get it.

"There was no evidence of any violation of duty upon the part of Operator Weatherford. On the contrary he is to be commended for making every possible effort to avert the accident after he discovered that No. 7 was coming into the station at high speed."

"It was perfectly proper for him to assist with the baggage, mail, etc. Shepherdsville is an intermediate and relatively unimportant train order office, the orders taken by this operator averaging only about one a day. It was, therefore, unnecessary that he should remain at the instrument all of the time. When this train No. 41 came into Shepherdsville it was proper under the rules for the operator to place the signal at green, and it would have been equally improper for him to change that signal back to red until train No. 41 had passed out from the station 200 ft. or more.

"Engineer Wolfenberger, Conductor Campbell and Flagman Greenwell were old men in the service and full experienced, and in 1914 passed satisfactory re-examinations on the operating rules. Mr. Wolfenberger has been an engineer for seventeen years and stood high in the estimation of the officers of the company."

Activities of General Operating Committee of the Eastern Roads

"DILUTION OF LABOR" is the greatest difficulty of the eastern railroads, and further depletion of their forces "must result in serious crippling of their transportation efficiency," says a statement issued by the General Operating Committee of the Eastern Railroads, pointing out that the roads have given up many men to the draft while hundreds of others have gone abroad to rebuild and rehabilitate the European railroads. "Whatever steps are necessary, therefore," continues the statement, "to insure the full manning of the railroads serving great munitions producing centres, and moving our army and its supplies to seaboard, must be taken and taken promptly."

Preliminary reports and careful estimates indicate, the report says, that 1,138,500 new men have been employed by the railroads represented by the General Operating Committee, during the first nine months of the year 1917.

"Of this number," says the statement, "53,900 were locomotive firemen (road and yard), 112,700 were brakemen, 299,900 were equipment repair men and engine house men, 355,400 were track repair men, 162,700 were freight handlers and station employees, and the remainder, 153,900, were in all other branches of the service.

"This 'turnover' for the nine months represents about twice the number of men normally entering the service in a year. This of itself does not seem a startling statement, but when it is remembered that there are in the five branches of the service separately mentioned about 564,300 men in the service of all the Eastern roads at any one time, and that of these about 301,500 had been in the service at least during one entire year most of them being old and experienced employees, it is apparent that to keep the other 262,800 places filled it has been necessary to employ in the nine months 948,600 men, or about three and three-fourths men for every job. This has meant the employment, training and subsequent loss of a man on each of these jobs every 10 weeks. The result has been a constant stream of new and inexperienced men with which to carry on the commerce of the great industrial section of the country. This dilution of their forces lies at the root of most of the present difficulties of the railroads."

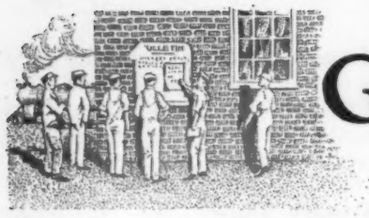
In addition to the 100 locomotives built for the War Department for service in France, which are to be allotted temporarily to the eastern roads, arrangements have been made for the lease of 200 of the locomotives built for the Russian roads, which will be changed to conform to American clearance and standards. These are Decapods of 47,000 lb. tractive power. They are made available to the roads at a rental of $50 per day, to be returned free of breakages and in good working order.

The committee has called to the attention of the presidents of the eastern roads the importance of moving box cars west as promptly as released from lading in order to provide for the eastbound movement of foodstuffs, and the sub-committees have been instructed to keep the committee advised daily of the number of empty box cars forwarded west and the number delivered to western roads.

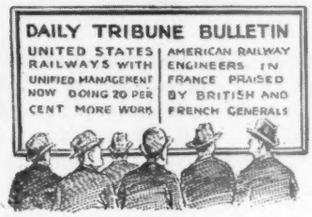
In order to promote efficiency in the movement of the 9,000,000 tons of ore to be moved from Lake Erie docks to interior furnaces this winter the chairmen of the Lake Coal and Ore committee have been authorized to instruct the commission of the Iron Ore Clearing Exchange to arrange for the allotment of ore to the furnaces and railroads on the basis of the government's requirements and the ability of the railroads to transport it economically. The chairman of the Lake Coal and Ore committee has also been authorized to arrange for the pooling of by-products coal if the co-operation of the Fuel Administration and the shippers can be obtained.

This action was taken before December 31, when the functions of the General Operating Committee were taken over A. H. Smith, assistant to Director General McAdoo.

The Commission on Car Service has issued General Order No. C. S. 14 and another circular entitled "Adjunct to General Order C. S. 14" prescribing regulations governing common or joint use of open cars by specified eastern railroads to govern the pool of coal cars which was described in last week's issue. The arrangement is under the jurisdiction of the Commission on Car Service and General Order C. S. 14 supersedes General Order 1 of the General Operating Committee of the Eastern Railroads dated December 12, on which the article in our past week's issue, page 1175, was based, although only a few changes have been made.



General News


DAILY TRIBUNE BULLETIN
UNITED STATES RAILWAYS WITH UNIFIED MANAGEMENT NOW DOING 20 PER CENT MORE WORK
AMERICAN RAILWAY ENGINEERS IN FRANCE PRAISED BY BRITISH AND FRENCH GENERALS

The shops of the Pennsylvania Railroad at Pitcairn, Pa., 15 miles east of Pittsburgh, were damaged by fire on the night of December 26; estimated loss $35,000.

In a fire at Long Island City, N. Y., on the night of December 30, a storage and office building of the Long Island Railroad was destroyed, together with two freight cars; estimated total loss $125,000.

The Atchison, Topeka & Santa Fe, which recently announced that it had granted a 10 per cent bonus for the six months' period just ended to unorganized employees, will pay the bonus in regular monthly installments in the coming year with the regular salaries of the men.

By the decision of arbitrators, recently appointed, the telegraphers of the Baltimore & Ohio are to have an increase in pay of 10 per cent—half the amount asked for—and they are granted the 26-day month; that is, they receive extra pay, at regular week day rates, when they work on Sundays.

Because of the importance of the local situation at Baltimore and Washington, where there has recently been a great deal of congestion, a sub-committee of the General Operating Committee of Eastern Railroads has been appointed at Baltimore with M. H. Cahill, general superintendent of the Baltimore & Ohio, as chairman. C. W. Galloway, general manager of the Baltimore & Ohio, has been appointed chairman of the Cincinnati sub-committee, succeeding W. J. Jenks.

Orders relative to providing an adequate supply of bituminous coal to the Pere Marquette, the Seaboard Air Line, the Atlantic Coast Line and the Norfolk Southern have been issued by the United States Fuel Administrator. The order recites that the present method of procuring coal under contract for these roads is causing delay in the shipment and supply of such coal, interference with commercial coal distribution and that an adequate and regular supply of coal for these roads is necessary. The order directs coal operators under contract with these roads to furnish a regular supply of coal each week, provided the mines are in operation.

The United States Civil Service Commission announces an open competitive examination for junior civil engineer, grade 1, for men only, on January 23. Vacancies in the Interstate Commerce Commission under the act providing for the valuation of the property of common carriers at salaries ranging from $1,320 to $1,680 a year will be filled from this examination. In addition to salaries, necessary expenses will be allowed during absences from headquarters in discharge of official duties. Competitors will be examined in the following subjects which will have the relative weights indicated: (1) Theory and practice of railway surveying and note book keeping and the mathematics used in this branch of engineering, including algebra, geometry, and trigonometry, but not including calculus, weight 50; (2) Education, training and experience, weight 50. Applicants should at once apply for Form 2039, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.

Government Steel Prices in Effect Until March 31

The President has approved the recommendation of the War Industries Board that the maximum prices heretofore fixed by the President upon ore, coke, pig iron, steel, and steel products, subject to revision on January 1, 1918, be continued in effect until March 31, 1918. New contracts calling for delivery on or after April 1, 1918, must be subject to revision by any authorized United States Government agency, so that deliveries after that date shall not exceed the maximum price then in force, although ordered or contracted for in the meantime.

Railway Regiments' Tobacco Fund

Last week was one of the best the Railway Regiments' Tobacco Fund has yet experienced, the feature of the week being the announcement that the Railway Business Association will donate $1,000 to the Fund from the proceeds of its annual dinner. A contribution was also received during the week from the Corning Glass Works, Corning, N. Y., for $120.

Headlight Order Modified

In view of the pressure upon the railroads for cars and engines to move war materials the Interstate Commerce Commission has postponed the effective date of its order requiring locomotives to be equipped with high power headlights from January 1 to July 1 as to all new locomotives placed in service. For locomotives in service prior to that date the changes required are to be made the first time locomotives are shopped for general or heavy repairs after July 1, 1918, and all locomotives must be so equipped before July 1, 1920.

Freight Bill Clearing Bureau in San Francisco

The three transcontinental railroads serving San Francisco have formed what is known as the San Francisco Railroad Clearing Bureau which, it is believed, will prove a source of economy in settling freight bills. All freight bills except those paid at the station on the delivery of freight will be sent daily to this clearing bureau by the local agents and be scheduled for one transmittal daily to each receiver of freight, who will make but one payment of freight charges to the bureau. G. H. Courtney has been appointed manager of the new bureau. A clearing bureau of this kind has been tried with success at Kansas City where 14 railroads are operating successfully under the plan and it is soon to be put in effect at Chicago.

Prices Fixed for Track Materials

The committee of the American Iron and Steel Institute, in charge of price establishment, has recommended maximum prices on angle bars, standard railroad track bolts, track spikes and scrap rail. The recommended base price per 100 lb. f. o. b. maker's mill for angle bars is $3.25; for track bolts ¾ in. by 3½ in., $4.90; and for track spikes 9/16 in. by 4½ in., $3.90. The recommended price for old steel rails 56 lb. per yard or heavier and 5 ft. and over in length, suitable for rerolling purposes is $33 per gross ton. The recommendation carries with it a set of extras for special requirements and sizes other than those specified for the base prices. Fixed prices are also recommended for bars rerolled from old steel rails at a base price of $3 per 100 lb.

Collision at North Vernon, Ind.

In a butting collision of passenger trains on the Baltimore & Ohio, one mile east of North Vernon, Ind., on December 29, one passenger and seven trainmen were killed and 12 persons were injured. General Manager C. W. Galloway issued a statement, saying:

"The engine crews of both trains were killed and the conductor of train No. 2 (east bound) was injured to such an extent that we have not been able to interview him. Investigation clearly indicates that No. 2 held an order to wait at North Vernon for second 23 (west-bound). For some reason not yet determined this order was disregarded. The automatic signal just ahead of where the engine of No. 2 was standing, while doing station work at North Vernon, and in full view, was in the caution position, indicating that the next signal east, and lo-

cated at the pull-in switch of the west-bound siding, was in the stop position. This signal at the siding switch was in the stop position because second 23 was in the block between Oakdale and North Vernon, but this signal was disregarded also and passed by train No. 2 while in the stop position. The automatic signal system has been tested and found to be working correctly.

Large New Grain Elevator at Chicago

On January 2, the Chicago & North Western opened a large grain elevator on the Calumet river, in South Chicago, Ill., which will have an ultimate capacity of 10,000,000 bu. The entire plant is of modern fireproof construction and includes a freight yard having a capacity of 1,250 cars and an engine terminal. The plant consists of a working house, a river house, storage tanks and other auxiliary facilities. The working house occupies a space of 235 ft. by 77 ft., 192 ft. high. Above a first story containing machinery there are 95 reinforced concrete bins 15 ft. in diameter by 74 ft. high, having a capacity of 931,000 bu. and the bins are surmounted by a cupola several stories in height. Adjacent to the storage house is a receiving shed 100 ft. by 300 ft. in which cars standing on 5 tracks are unloaded into 24 track hoppers. The working house will handle 1,250,000 bu. of grain in 24 hours. The storage house consists of 104 reinforced concrete bins 22 ft. 6 in. in diameter by 104 ft. high, affording a capacity of 4,383,000 bu. The river house consists of a first story 18 ft. 9 in. high, supporting 24 grain bins like those in the storage house and having a total capacity of 778,000 bu. It is equipped with six shipping legs for loading grain into boats and a large marine tower 145 ft. high for unloading ships. All of the tanks are of reinforced concrete supported on a substructure of the same material, while the cupolas surmounting the tanks are of steel frame construction covered with wire mesh and plaster. Other facilities include a power house, machine shop, dust house and employees' welfare building.

Western Railroad Executives Meet at Chicago

At a meeting of the executives of a number of Western railroads at Chicago on December 31 thorough consideration was given to all phases of the President's proclamation assuming control of the railroads and order No. 1 of the Director General of Railroads. Each railroad will put into effect immediately so far as possible the direct routing of freight. For the purpose of making a further study of this subject and to establish new through routes for freight wherever it was considered advisable the following committee was appointed: J. G. Woodworth, vice-president of the Northern Pacific, chairman; A. C. Johnson, general traffic manager of the Chicago & North Western; W. L. Park, vice-president of the Chicago Great Western; J. F. Porterfield, superintendent of transportation of the Illinois Central, and H. E. Pierpont, freight traffic manager of the Chicago, Milwaukee & St. Paul. To save clerical labor the custom of making passing reports of freight shipments both by wire and mail will be discontinued and tracing of freight will be done only after reasonable time has elapsed for the car or shipment to arrive at destination. The common use of terminals as recommended by the Director General will be effected at larger centers through committees of operating officials with the view to securing the fullest possible use of all terminal facilities regardless of ownership. Every effort will be made to expedite the movement of traffic and to conserve locomotives and fuel.

The new committee convened for the first time on January 2 and an additional committee was appointed to consider general reductions in passenger service consisting of B. L. Winchell, director of traffic of the Union Pacific, chairman; W. B. Storey, vice-president of the Santa Fe Lines, and C. G. Burnham, vice-president of the Chicago, Burlington & Quincy.

Railway Business Association Dinner

The ninth annual meeting of the Railway Business Association will be held at the Waldorf-Astoria Hotel, New York City, January 25, beginning at 11 a. m.; and the annual dinner will be held at the same place at 7 in the evening. This is to be called a "Hoover" dinner and any profit realized will be given to the American Red Cross and to the Railway Regiments' Tobacco Fund. The dinner price will be $10 a plate, as usual. There will be no wine, and the dinner will be of a frugal character consonant with the present times. It is intended to give $1,000 to the Tobacco Fund and any further surplus to the Red Cross.

The speakers at the dinner will be Samuel Rea, president of the Pennsylvania Railroad, and Harry A. Wheeler, chairman of the Railroad Committee of the Chamber of Commerce of the United States and United States Food Administrator for the State of Illinois. To the readers of the *Railway Age* Mr. Rea needs no introduction. Mr. Wheeler also is well known as a former president of the Chamber of Commerce of the United States and is peculiarly well fitted to speak on the business side of the transportation problems of the day.

President George A. Post, in the call for the meeting and dinner, puts emphasis on the serious duties of the association at the present time and gives the reasons why a meeting should be held, when a conventional feast would be out of place. He says:

"Recent events in the conduct of the war have brought to our association new and great responsibility. We face centralization of the railroads under the aegis of the government. Success or failure of the Allies in the war may depend upon the conditions under which trained railroad management in America does its work. Of equal consequence is the restoration after the war of that individual initiative and non-governmental management which have made American railways foremost in the world. Centralization is not confined to railroads. Our members and all other business men have a direct stake. But the railway aspect is the first trench. Our peculiar relation and equipment constitute us the front line. Developments are coming swiftly. Business sentiment and public opinion can only take form under leadership and with organization."

Pennsylvania Will Eliminate 104 Weekday Trains

The Pennsylvania Railroad will on January 6 put into effect a general reduction of passenger train schedules on the Lines East. A total of 104 weekday trains and 51 Sunday trains will be withdrawn, and the schedules of other trains will be altered.

The principal changes in through service will include the withdrawal of the Boston-St. Louis-Pittsburgh express, the St. Louis-Pittsburgh-Boston express (the two through express trains east and west recently established between Boston and St. Louis via the Hell Gate Bridge route), the "Clevelander" and "Buckeye Limited" (the daily express trains between New York and Cleveland), main line express No. 12 (a Pittsburgh-Philadelphia express leaving at 7:10 a. m.), and the "Congressional Limited," between New York and Washington, both north and southbound.

The "Congressional Limited" is probably the most famous train operated on the Pennsylvania, and has been running continuously for 32 years, having been first established on December 7, 1885.

Eastern express No. 8, now leaving Pittsburgh at 7:50 a. m., and running to New York, will be changed to leave at 7:20 a. m., and will do all the work of No. 12, arriving at Philadelphia at 5:50 p. m., and will not run through to New York.

The Cleveland, Ohio, Akron and other sleeping cars now carried on the "Clevelander," will be transferred to the "Manhattan Limited," leaving New York at 5:04 p. m.

The daylight sleeping cars operated between New York and Pittsburgh, westbound on train No. 25 (the "Metropolitan Express"), and eastbound on train No. 8 (the "Eastern Express") will be withdrawn and the sleeping cars on these trains will hereafter run only between Pittsburgh and points west thereof. This is in line with the recent order abolishing daylight sleepers to and from the South between New York and Washington.

The Pennsylvania and the Baltimore & Ohio have agreed to consolidate their through service between New York and Washington, and operate their trains on alternate schedules. The Baltimore & Ohio will continue to operate its trains to and from the station of the Central of New Jersey in Jersey City and will not, for the present at least, make use of the Pennsylvania station in New York.

The Pennsylvania will eliminate the train leaving New York for Washington at 4:35 p. m. The train now leaving New York for Washington at 6 p. m. will run only as far as Philadelphia. The train leaving New York at 12:08 p. m. will be changed to leave at 11:08 a. m. The train now leaving New York for Philadelphia at 5:02 p. m. will be changed to leave at 5:08 p. m., and will run through to Washington. Under the arrangement to alternate service with the Baltimore & Ohio the Pennsylvania will operate trains from New York to Washington, leaving at the following hours: 12:15 a. m. (sleepers only); 12:30 a. m. (sleepers and coaches); 8 a. m.; 9:15 a. m.; 11:08 a. m.; 1:08 p. m.;

3:30 p. m.; 5:08 p. m., and 9:30 p. m. In addition on Sunday night an extra sleeping car section will leave at 11:34 p. m.

The northbound trains on the Pennsylvania for New York will leave Washington as follows: 12:10 a. m. (sleepers and coaches); 12:40 a. m. (sleepers and coaches); 8 a. m.; 9 a. m.; 10 a. m.; 11 a. m.; 2:40 p. m. and 4 p. m. This schedule will eliminate from the northbound service the trains leaving Washington for New York at 12:30 p. m. and 4:27 p. m.

The train leaving Washington at 4 o'clock will replace the "Congressional Limited," and will consist of day coaches, one parlor car and one restaurant car. The "Congressional Limited," southbound, will not be replaced.

The train now leaving Philadelphia at 12:30 p. m. for Washington, will be eliminated, as will also the trains leaving Washington at 4:03 p. m., and 7 p. m. for Philadelphia. The "Federal Express," now leaving Washington at 7:30 p. m., will be changed to leave at 7 p. m., and will accept passengers for points south of New York. The "Federal Express," southbound, will arrive at Washington at 8:30 a. m.—one hour later than at the present time. The "Federal Express" will carry a restaurant car, both northbound and southbound.

In arranging for the reduction of local and commutation service the management has followed the policy of avoiding interference with trains carrying workmen to and from important industrial plants, and also has sought as far as possible, to obviate serious disarrangement of other schedules.

The reduction in the service between Philadelphia and Atlantic City will include the elimination of the bridge train leaving Broad Street station at 1:34 p. m. on week days. But this train will continue to operate on Sundays. The steam trains from Market Street Wharf, Philadelphia, at 9:20 a. m. and 4 o'clock p. m., weekdays, will be withdrawn, as will also be the weekday and Sunday electric trains leaving at 11 a. m., 3 p. m. and 8 p. m. Northbound, the bridge train leaving Atlantic City at 7:45 a. m. will be cancelled, as will also be the steam trains from Market Street Wharf leaving at 9:30 a. m. and 5:15 p. m. The northbound electric trains leaving Atlantic City at 11 a. m., 3 p. m. and 9 p. m. will be taken off. Electric train leaving at 11 p. m. will be changed to leave at 10 p. m.

Train service between New York, Long Branch, Asbury Park, Ocean Grove and Point Pleasant will be alternated between the Pennsylvania Railroad and the Central Railroad of New Jersey, the Pennsylvania Railroad eliminating two round trips under the revised schedules adopted by the two companies.

The train leaving Philadelphia at 8 p. m. for New York will be discontinued. Trains leaving Philadelphia at 8:30 a. m. and New York at 4:20 p. m. will be discontinued between Philadelphia and Trenton. Otherwise the service between those two cities will be practically unchanged, except as it is affected by the discontinuance of through trains.

Train No. 33—(the "Pan Handle Express"), from New York for the West, which now runs into Broad Street station, Philadelphia, leaving there at 4:32 p. m., will be changed to run via North Philadelphia only.

Train No. 34—(the "Seaboard Express"), from the West to New York, which now arrives at Broad Street station, Philadelphia, at 12:24 p. m., will run via North Philadelphia only, arriving at 12:48 p. m.

Changes to become effective on the Schuylkill division have already been announced, and a revised and reduced schedule between Philadelphia and Cape May is already jointly in effect by the Pennsylvania and the Philadelphia & Reading Railway.

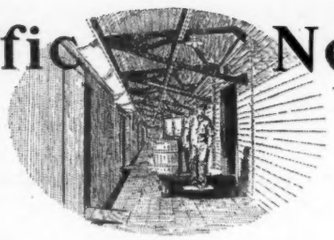
Effective January 6, not more than one parlor car will in any case be operated on Pennsylvania trains carrying coaches. Parlor cars will be discontinued entirely on Schuylkill division trains.

In addition a number of reductions will be made in club and restaurant cars, including the discontinuance of the restaurant cars on the 1 p. m. and 7 p. m. trains between New York and Philadelphia, in each direction, and also from train No. 8—(the "Eastern Express").

On the Sunbury division, between Pottsville and Shenandoah, and Pottsville and Sunbury, via Hazleton, 12 or more trains will be withdrawn and the schedules of others revised. The purpose of this is to clear that division for the transportation of anthracite coal to Philadelphia, as the division traverses some of the most important anthracite coal-producing regions on the Pennsylvania.

A number of midday trains will be eliminated on branch lines on practically all portions of the Pennsylvania east of Pittsburgh, to facilitate the movement of coal and other freight.

Traffic News



The Cleveland, Cincinnati, Chicago & St. Louis inaugurated the sailing day plan of handling l. c. l. freight in Cincinnati, Ohio, on January 2.

The Chicago & Alton has lengthened its fast freight schedules between Chicago and Kansas City, Mo., via St. Louis, from 30 and 33 hours to 40 hours.

The final statistics on the movement of the California fruit crop show that 24,628 carloads of deciduous fruit were shipped out of the state in 1917. This is an increase over 1916 of 6,737 carloads, or 37.6 per cent. The total shipments of all the leading varieties of fruit exceeded the 1916 totals, grapes leading the way with an increase of 5,000 carloads.

The postoffice department proposes to establish a mail route by motor car between Philadelphia, Pa., and Easton, 80 miles; and already has started one between Philadelphia and Oxford, Pa., 50 miles. Contracts are being prepared also for a similar run from Pittsburgh, Pa., to Wheeling, W. Va., 60 miles; and another from Pittsburgh to Cumberland, Md., 140 miles. Similar action is contemplated in other States.

Increase in Rates on Canadian Railways

The Board of Railway Commissioners of Canada, on December 26, issued a decision providing for a general increase of 15 per cent in passenger rates throughout the Dominion, except in British Columbia, where the rate at present is three cents a mile. With a considerable number of exceptions the order allows also an increase in freight rates of 10 per cent in western Canada and 15 per cent in the east.

War Department Takes Bush Terminal

The War Department, through Acting Quartermaster General Geo. W. Goethals, has requisitioned the Bush Terminal piers and warehouses in New York City (South Brooklyn). These terminal facilities will pass immediately under the control of the War Department. Eight piers and 130 warehouses will be taken over, leaving to the Bush Terminal Company the railroad terminal and the industrial buildings. It is estimated that the net income of this property at present is more than $1,000,000 a year. The Bush Terminals and Bush Terminal Railroad represent an investment of about $20,000,000. The industry covers nineteen city blocks, and contains twenty-one miles of railroad tracks. Its waterfront space is more than 3,000 feet, and factories and other buildings cover nine blocks. The piers that the Government will acquire are each a quarter of a mile in length. The railroad yards can accommodate 2,000 cars, and more than 12,000 persons are employed in warehouses, railroads and manufactories.

Developments in the Coal Situation

Judge Robert S. Lovett, government priority director, has issued a supplement to Priority Order No. 5 granting priority in car supply and in movement of certain preferred commodities, to include in the third subdivision of preferences provided by that order, structural material when consigned to constructing quartermasters for account of contractors engaged in emergency construction work under the cantonment division of the quartermaster general's office. The first and second preferences under the order are given to steam railroad fuel and to livestock, perishable freight, food and feed.

The voluntary curtailment of all-rail shipments of coal to the northwestern states during the next 90 days is proposed by John F. McGee, state fuel administrator for Minnesota, after conferences held by the northwestern administrators with W. H. Grover-

man, the federal officer in charge of distribution in the northwest. By the exercise of strict economy it is hoped that the northwestern states will be able to get along for the next three months with the supply received by lake. Mr. McGee says: "After very careful consideration we conclude, in view of the distress of the Middle States, that we can get along for the next 90 days without rail shipments of bituminous coal from other states. I am compelling the general use of wood in the northern part of the state. The Soo and Great Northern railroads have agreed to furnish a supply of cars to move all wood fuel in wooded parts of state. Cutting down all unnecessary use of coal as fuel and shutting down street lighting altogether, outside of the large cities, between 5 p. m. and 6 a. m. will enable us to relieve distressing situation in other states."

Suburban Traffic Out of New York Handicapped

As a result of the record breaking cold spell in the neighborhood of New York this last week, suburban service on the railroads operating out of Jersey City and Hoboken was severely handicapped and through trains were in many cases considerably delayed. A shortage of water at the New Jersey waterfront terminals was the main cause. Householders in the waterfront communities to keep pipes in their houses from freezing let their faucets run all night and thereby seriously depleted the reserves available.

Because of the low pressure the tanks of all railroads in Jersey City were very low, the Erie Railroad being chiefly affected, and the Central of New Jersey also suffering badly. The Pennsylvania and Lackawanna were able to operate on water brought in in tanks from Newark and other neighboring cities but trains were seriously delayed.

On the Erie the situation was so bad Wednesday that the company temporarily discontinued 50 of its 330 trains operating out of Jersey City. Those that ran were sometimes very late in leaving and were overcrowded almost as badly as the rapid transit trains in Manhattan and Brooklyn.

Coal Situation at New York

On Wednesday night 4,216 carloads were received at Jersey City and other New Jersey ports opposite New York City, carrying about 210,800 tons of coal.

At a conference of the presidents and other officers of all the coal carrying roads serving Greater New York, it was determined to lighter whole trainloads of coal to Manhattan Island, put them on team tracks and unload the cars directly into trucks for distribution in the various sections of Manhattan and the Bronx.

A. H. Smith, president of the New York Central, and now assistant director general of railroads, estimated that at least 300 carloads of coal could be brought into the greater city daily by these means, in addition to the increasing supply brought over through the customary channels of terminal transportation, by lighterage to Bay Ridge and other points of Long Island and by barges to coal pockets all along the city's waterfront.

Western Roads Make Reductions in Passenger Service

The Chicago, Burlington & Quincy, the Chicago & North Western and the Chicago, Milwaukee & St. Paul made a number of changes in passenger service effective about the first of the year. The Burlington discontinued two trains between Chicago and Lincoln, Neb., and discontinued observation cars on two trains between Denver and Chicago, lounge cars on two trains between Chicago and Minneapolis, Minn., and compartment observation cars on the Oriental Limited train between Chicago and St. Paul. One train operating between Clarinda, Iowa, and Villisca has also been discontinued. The Chicago & North Western has discontinued carrying observation cars on four trains between Chicago and Minneapolis, Minn., and two between Chicago and St. Paul, Minn.; has discontinued observation-buffet-lounging cars on four trains between Chicago and Duluth, Minn., and two between Chicago and Omaha, and has abandoned parlor car service on four trains between Chicago and Madison, Wis. The Chicago, Milwaukee & St. Paul has discontinued all observation and buffet smoking cars between Chicago and Minneapolis and St. Paul, Chicago and Omaha, and Chicago and Kansas City.

Commissions and Courts

Interstate Commerce Commission

The commission has denied the application of the Pennsylvania Railroad for authority to file tariffs providing for an extra fare charge on trains No. 125 and 126 between New York and Washington, D. C., and intermediate stations. The commission says no showing has been made justifying the proposed extra fares.

The commission has issued an amendment to its tariff regulations in accordance with its interpretation of the recent amendment to section 15 of the act as having placed upon the carrier that desires to withdraw from, or to cancel its concurrence in, a joint rate or fare, the duty of securing approval of the commission to higher rates, fares or charges that will result from a cancellation of the joint rate or fare.

The commission, on December 20, approved for filing new rules, presented by R. H. Countiss and Eugene Morris, agents for the Transcontinental and Central Freight Association lines, which restrict the application of rates on export traffic originating at various points and destined to Pacific Coast ports, to shipments consigned through to destination after specific reservation of space has been secured and confirmed, and requiring that rail, port and ocean charges be fully prepaid or guaranteed. The commission in its notice says that these rules will have a tendency to relieve the existing congestion of freight at the ports.

Fourth Section Applications

In order to facilitate the handling and disposition of fourth section applications assigned for hearing, and for the purpose of obviating the necessity for applications under the fifteenth section of the act when fourth section relief is denied, the Interstate Commerce Commission has issued a notice saying that the record in fourth section hearings should contain full and complete information, not only of the reasons and facts upon which the prayer for relief is based, but in addition thereto, evidence and data which will enable the commission to determine what would be a reasonable rate to the terminal point to be the maximum at intermediate points on the line of the petitioning carrier or what would be reasonable rates to the higher rated intermediate points in the event that fourth section relief is denied. The carriers should therefore be prepared to show in support of their application in each instance the information called for on a long list of subjects enumerated in the order. The commission says that a difference of but a few miles in distance is not of itself considered as placing a carrier at such a disadvantage as to warrant relief from the fourth section to charge higher rates at intermediate points, but the line or route requesting relief must be shown to be circuitous to a marked degree, usually not less than 15 per cent greater than the distance of the short line between the same points when based solely on the ground of a circuitous route. The commission also usually denies relief where the carriers are extremely circuitous, in the absence of special circumstances, believing that from an economical standpoint the carriers are not justified in meeting rail competition via unreasonably circuitous routes.

Personnel of Commissions

F. J. H. Kracke, of Brooklyn, and Charles Bulkley Hubbell, of Manhattan, have been appointed members of the New York State Public Service Commission, first district, by Governor Whitman. Mr. Kracke, formerly commissioner of plant and structures in the city government, succeeds Commissioner Hayward, now colonel of the Fifth New York Infantry, and Mr. Hubbell, former president of the Board of Education of New York City, succeeds Colonel Henry W. Hodge, now in France.

Court News

Improper Packing of Freight

In an action against a carrier for damages caused by the freezing of a shipment of a bottled beverage, the Oregon Supreme Court holds that a carrier to whom barrels containing a bottled beverage were delivered and which transported them without negligence was not liable for any injury due to improper packing of the bottles in the barrels. It was not authorized to open the barrels, but was bound to ship the goods in the form in which they were delivered to it, unless they were manifestly in bad order.—Michellod v. Oregon-Washington R. & Nav. Co. (Ore.), 168 Pac., 620. Decided November 13, 1917.

Removal of Rejected Ties

Cross-ties were placed on a right of way for the railroad's acceptance and use. The company duly inspected the ties, expressly rejected them as unsuited to its needs and so notified the person offering them. In an action against the railroad the Georgia Court of Appeals held that the bare fact that the ties were subsequently removed by some one, it not appearing when, how, or by whom, did not create any presumption that the ties had been accepted and used by the company, and there was no obligation on its part to pay therefor.—Atlantic Coast Line v. Drake (Ga.), 94 S. E., 65. Decided October 31, 1917.

Cost of Short-Distance Passenger-Carriage

The Pennsylvania Public Service Commission dismissed a petition against a railroad company for discrimination in passenger rates. On appeal it appeared that the company charged the same rates of fare to a station 2.7 miles from its terminal as to a station 4.1 miles, and the commission found, from sufficient and competent evidence, that the business between the terminal and the first station was carried on at a considerable loss, and that there was a greater relative cost of transportation to the first station than to the second. The order of the commission was affirmed.—Bradley v. Pennsylvania, 66 Pa. Superior Ct. 428. Decided April 30, 1917.

Fencing—Public Roads

In an action against a railroad for killing a horse and a mule the Springfield Court of Appeals holds that the Missouri statute requiring railroads to fence their right of way does not require the fencing of roads which are in fact, though not legally, highways, and a railroad company is justified in omitting to fence, and constructing a crossing for a well-traveled road, the company not being bound to determine the legality of the road. The animals were killed at such a crossing which the public had used as a highway for 10 years. A judgment for the defendant was sustained.—Walker v. Southwest Missouri (Mo.), 198 S. W., 441. Decided November 13, 1917.

Carrying Passenger Past Station—Damages Recoverable Must Not Be Remote

A woman with two little children was carried past her station some four miles because the conductor, when she paid him her fare, failed to tell her the train did not stop there. When the discovery was made that she had been carried by, she became so frightened and excited that she became seriously ill. She was subjected to no insults, inclement weather or to any of the usual causes of sickness or mental auguish, but was politely assisted from the train at the next station, taken by the company's agent to a hotel which was conducted by a woman whom she knew, and on the following morning was returned free of charge to her station, where another friend assisted her to her home. She obtained a verdict from a jury of $1,250 on which judgment was entered. On appeal this was reversed by the Texas Court of Civil Appeals, which held that her injuries were not the proximate result of the conductor's failure to stop the train at her station, as the probability of such serious consequences could not have been anticipated; and for breach of a contract in carrying a passenger beyond his destination the damages recoverable are limited to those which are proximate and not remote or contingent.—Gulf, C. & S. F. v. Nichols (Tex.), 198 S. W., 338. Decided October 26, 1917. Rehearing denied November 14, 1917.

Supply Trade News

Frank L. Brown, president of the Ransome Concrete Machinery Company, New York, died Tuesday night in his apartment in that city, from heart disease. Mr. Brown was 57 years old.

The P. & M. Company, Chicago, has established a southwestern sales office in the Railway Exchange building, St. Louis, Mo., in charge of **W. H. Reaves,** who has been associated with this company for the past year.

The Union Supply Company, Chicago, Ill., has opened a branch office in the Call building, San Francisco, Cal., in charge of **A. A. Dawley,** western representative. Mr. Dawley was formerly purchasing agent of the Denver & Salt Lake at Denver, Colo.

E. K. Carter, representative of the Standard Asphalt & Refining Company, Chicago, Ill., has received a commission as captain in the Engineer Officers Reserve Corps and has been ordered to report for active duty at Camp Lee, Petersburg, Va., on January 5.

F. S. Wilcoxen, who for the past nine years has been mechanical representative for the Pilliod Company, New York, has resigned and has accepted a position with the Perolin Railway Service Company as special representative. Mr. Wilcoxen commenced his mechanical career with the Pennsylvania Company at Wellsville, Ohio. He has served as locomotive fireman and engineer on the C. C. and S. Ry. (now a part of the Wheeling & Lake Erie), also as locomotive engineer and roundhouse foreman on the Alabama Great Southern Railway at Birmingham, Ala., and with the Toledo, St. Louis & Western Railway as locomotive engineer, road foreman of engines, general foreman and division master mechanic. He assumes his duties as special representative of the Perolin Railway Service Company on January 15.

F. S. Wilcoxen

I. R. Garretson, lumber agent of the Chicago & Eastern Illinois, was appointed traffic manager of the Marsh & Truman Lumber Company, Chicago, Ill., effective January 1, to succeed **A. F. Marsh** and **F. L. Bronez,** who have entered the U. S. Army service.

John Henry Goehst, president of the Federal Sign System (electric) and the Federal Electric Company of Chicago, died at his home in Chicago on January 1, at the age of 53. At the time of his death Mr. Goehst was also treasurer of the Minerallac Electric Manufacturing Company and construction superintendent of the Commonwealth Edison Company of Chicago.

J. M. Hopkins, president of the Camel Company of Chicago, became chairman of the board of directors on January 1, and was succeeded as president by **P. M. Elliott,** formerly vice-president. **W. W. Darrow,** formerly general manager, is now vice-president, and **A. B. Wegener,** general manager of sales, was made secretary.

Railway Financial News

CHICAGO, ROCK ISLAND & PACIFIC.—The directors on December 28 declared a semi-annual dividend of 3½ per cent on the $29,743,889 of 7 per cent preferred stock and a semi-annual dividend of 3 per cent on the $25,000,000 of 6 per cent preferred stock outstanding.

DELAWARE, LACKAWANNA & WESTERN.—This company has declared a quarterly dividend of 5 per cent, payable January 22 to stock of record January 5. Heretofore it has been the policy of the directors to declare 20 per cent dividend disbursements per annum in the form of four quarterly payments of 2½ per cent each and a special dividend of 10 per cent. Henceforth the board will declare quarterly dividends only and omit the special dividend which has been declared once a year of 10 per cent. Thus the quarterly rate is now established at 5 per cent, maintaining the same per annum rate as heretofore of 20 per cent.

DENVER & RIO GRANDE.—The Equitable Trust Company of New York, which, as trustee of the old mortgage of the Western Pacific, received last June a judgment of $32,270,343 against the Denver & Rio Grande, has obtained attachments in New York and in Chicago against certain property of the latter road.

Alvin W. Krech, president of the Equitable Trust Company, announced on December 31, that in order that the Denver & Rio Grande might not be embarrassed in meeting the interest maturing today on the underlying bonds of the company, the trust company, acting at the instance of the Western Pacific, had offered to loan the Denver & Rio Grande $1,500,000. This offer, however, was declined at a meeting of the directors of the Denver company. In telling of the Equitable Trust Company's offer, President Krech said:

"The occasion for the offer arose from the fact that on December 27 the Equitable Trust Company, as trustee for the bondholders of the Western Pacific, which had been guaranteed by the Denver company, brought suit and attached various non-operating assets of the Denver Company located in New York and Chicago in order that a lien might be impressed upon those assets to secure the judgment rendered by the United States Court in favor of the Equitable Trust Company as trustee. It was the view of the Western Pacific bondholders that it would be to the interest of all concerned that there should be no lapse in the ability of the Denver company to meet its fixed obligations.

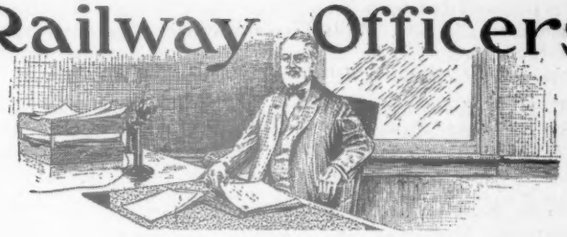
"The reasons for attaching the assets of the Denver company were set forth in a statement issued by the Equitable Trust Company on December 27. Neither the Equitable Trust Company nor the Western Pacific bondholders have any desire to embarrass the operations of the Denver Company, and the action in bringing suit and levying attachment on December 27 was solely, under the proclamation whereby the government assumed possession of the railroads of the country, to protect the priority of the rights of the Western Pacific bondholders until settlement of pending suit in the United States courts."

DENVER, BOULDER & WESTERN.—The Colorado Public Utilities Commission has forbidden this company to discontinue service and sell its properties.

ILLINOIS CENTRAL.—The directors on January 2 declared a regular quarterly dividend of 1¾ per cent, payable March 1 to stock of record February 1. The stock has hitherto been on a 6 per cent dividend basis, but three months ago an extra dividend of 1 per cent for the fiscal year was declared. The present declaration makes this extra part of the regular dividend.

PENNSYLVANIA RAILROAD.—The Philadelphia, Baltimore & Washington, having been leased by the Pennsylvania Railroad for 999 years from January 1, 1918, its lines will, on that date, become a grand division of the Pennsylvania Railroad, and will be designated the Southern Division.

Railway Officers



Executive, Financial, Legal and Accounting

Theodore P. Scott has been appointed an assistant treasurer of the Lehigh & New England and the Lehigh Coal & Navigation Company with office at Philadelphia, Pa.

The election of **L. E. Johnson**, as chairman of the board, and of **N. D. Maher** as president of the Norfolk & Western, is commented on elsewhere in this issue.

H. A. Scandrett, interstate commerce counsel of the Union Pacific System, has been appointed assistant director of traffic and commerce counsel, effective January 1, with headquarters at Chicago.

L. A. Harkness, assistant to the controller of the Illinois Central, with headquarters at Chicago, was appointed assistant controller with office at Chicago, Ill. Other appointments that became effective January 1 in the accounting department are as follows: **W. J. Cunningham** was appointed general accountant; **C. H. Drazy**, assistant to the controller, was appointed general auditor of expenditures and **W. A. Blazing**, became auditor of joint facilities; **J. F. Shepherd**, assistant general auditor, was appointed general auditor of receipts and **L. B. Butts**, became auditor of miscellaneous receipts.

Arthur C. Needles, general manager of the Norfolk & Western with office at Roanoke, Va., has been appointed vice-president in charge of operation. He was born on Jan. 10, 1867, at Baltimore, Md., and was educated in the public schools and Swarthmore College, Pennsylvania. He began railway work in 1882 as a rodman on the Washington, Ohio & Southern, and in 1883 became a rodman in the engineering department of the Norfolk & Western, and was then yard clerk and brakeman on the same road. In 1884 he was made night and day yardmaster, and from April, 1887, to August, 1890, he was yardmaster first at Pulaski, Va., and then at Bluefield, W. Va. On August 1, 1890, he was appointed assistant trainmaster, and on December 25, 1898, was made trainmaster of the Radford division. He was then one month assistant superintendent of the Pocahontas division, and in June, 1901, was promoted to superintendent of the Shenandoah division. From December, 1902, to February, 1904, he was superintendent of the Pocahontas division and was then made general superintendent of the same road. On December 1, 1912, he was appointed general manager, from which position he is now promoted to vice-president of the same road as above noted.

A. C. Needles

Operating

A. J. Broderick has been appointed assistant superintendent of the Salt Lake division of the Denver & Rio Grande, with headquarters at Salt Lake City, Utah.

A. M. Willsie, permanent chairman of the fuel committee, and L. O. Murdock, trainmaster at Lincoln, Neb., of the Chicago, Burlington & Quincy, were appointed inspectors

of transportation with headquarters at Chicago, Ill., effective December 26. Mr. Willsie was succeeded as chairman of the fuel committee by G. A. Healey, road foreman of locomotives at Galesburg, Ill.

T. M. McLaughlin, assistant division superintendent of the Maine Central with office at Waterville, Me., has been appointed superintendent of the Eastern division, with office at Bangor, vice **M. F. Dunn,** resigned.

F. B. Miller was appointed general superintendent of the Colorado, Wyoming & Eastern, with headquarters at Laramie, Wyo., succeeding **G. R. Simmons,** assigned to other duties, effective December 20.

Joseph W. Foote, superintendent of the Delaware and Jefferson divisions, of the Erie, with office at Susquehanna, Pa., has been appointed superintendent of the Wyoming division and **Edward J. Edmunds,** superintendent of the Wyoming division, with office at Dunmore, has been appointed superintendent of the Delaware and Jefferson divisions.

Arthur DeGarmo, inspector in the freight train department of the Chicago, Milwaukee & St. Paul, was appointed trainmaster of the Racine & Southwestern division with jurisdiction also over that part of the Illinois division from Ashdale to Nahant and from Savanna to Ebner, with headquarters at Savanna. The territory of **D. E. Rossiter,** trainmaster at Savanna, will be confined to the Illinois division except as above, effective January 1.

Charles Burlingame, whose appointment as superintendent of the Terminal Association of St. Louis and the St. Louis Merchants' Bridge Company of St. Louis, with the same headquarters, was mentioned in these columns December 21, was born at Wilmington, Ind., on May 31, 1871. He began his railway career in July, 1886, and from that date to September, 1890, was messenger and clerk in the offices of the agent and superintendent of the St. Louis Bridge & Tunnel Company. From September, 1890, to May, 1899, he was chief clerk to the superintendent of terminals of the Missouri Pacific; from May, 1899, to February, 1900, he was chief yard clerk with the St. Louis, Iron Mountain & Southern; from February, 1900, to August, 1902, he was assistant yardmaster with the same road; from August, 1902, to January, 1903, he was assistant chief clerk in the superintendent's office of the Terminal Association of St. Louis; from January to December, 1903, he was chief clerk to the superintendent of the Terminal Association of St. Louis; from December, 1903, to April, 1907, he was night trainmaster with the same company, and in April, 1907, he was appointed superintendent of the Wiggins Ferry Company, the St. Louis Connecting Railway, the St. Louis Transfer Railway and the Interstate Car Transfer Company, which position he held until his appointment as noted above.

C. Burlingame

W. J. Jenks, general superintendent of the western general division of the Norfolk & Western, with office at Bluefield, W. Va., has been appointed general manager, with office at Roanoke, vice **A. C. Needles,** promoted; **J. T. Carey,** superintendent of the Scioto division, with office at Portsmouth, Ohio, has been appointed general superintendent of the Western general division, with office at Bluefield, vice **Mr. Jenks; H. C. Weller,** superintendent of the Pocahontas division, with office at Bluefield, W. Va., succeeds **Mr. Carey; W. O. Franklin,** trainmaster, with office at Bluefield, succeeds **Mr. Weller; A. S. Payne** has been appointed assistant superintendent of the Radford division, with office at Roanoke, Va.; **J. W. Robinson,** assistant trainmaster, with office at East Radford, has been appointed trainmaster of the Radford division, with office at Roanoke, vice **J. T. Goodykoontz,** transferred, as trainmaster of the Pocahontas division, with office at Bluefield, and **G. H. Gilmer** has been appointed assistant trainmaster of the Radford division, with office at East Radford, vice **Mr. Robinson.**

Traffic

G. B. Haynes, general passenger agent of the Chicago, Milwaukee & St. Paul, with office at Chicago, has assumed the duties of **F. A. Miller,** passenger traffic manager, resigned, effective December 31. Retaining the same title, **T. W. Proctor,** assistant general freight agent, with office at Minneapolis, Minn., has been transferred to Chicago in the same capacity. **A. A. Wilson,** division freight and passenger agent, with office at Des Moines, Iowa, has been appointed general agent of the freight department, with office at Minneapolis. **E. K. Garrison,** division freight and passenger agent, with office at Portland, Ore., has been appointed general agent, with office at Milwaukee, Wis., in charge of both freight and passenger traffic. **W. H. Dodsworth,** general agent, with office at Milwaukee, has been appointed assistant general agent, with headquarters at the same place. **C. E. Hilliker,** Canadian freight and passenger agent, with office at Toronto, Ont., has been appointed division freight and passenger agent, with office at Des Moines.

Engineering and Rolling Stock

R. C. Beaver has been appointed assistant mechanical engineer of the Bessemer & Lake Erie, with office at Greenville, Pa.

P. S. Winter has been appointed general car foreman of the Bessemer & Lake Erie, with supervision over the car department shops at Greenville, Pa.

Douglas Leard has been appointed right of way engineer of the Seaboard Air Line with office at Portsmouth, Va., vice **I. H. Farmer,** who has entered military service.

Charles T. Sugars has been appointed master mechanic of the Louisiana & North West with office at Homer, La., succeeding **J. S. Motherwell,** resigned to go to another company.

J. D. Esposito, assistant chief engineer of the Chicago Union Station Company at Chicago, has gone to Washington with the Emergency Fleet Corporation, and his former duties have been assumed by **A. J. Hammond,** principal assistant engineer.

J. K. Booth, general foreman of the Bessemer & Lake Erie with office at Greenville, Pa., has been appointed master mechanic, with supervision over the locomotive department shops at Greenville, and **E. F. Richardson** has been appointed assistant to the engineer of motive power.

F. M. Seifer has been appointed division engineer on the Sacramento division of the Southern Pacific with office at Sacramento, Cal., to succeed **W. H. Kirkbride,** whose appointment as assistant superintendent of the same division was announced in these columns on December 14.

Thomas Allison has been appointed road foreman of engines on the Pasco division, of the Northern Pacific, with headquarters at Pasco, Wash., vice **C. A. Wirth,** promoted, and **J. H. Weston** has been appointed road foreman of engines on the Minnesota division, with headquarters at Staples, Minn., vice **M. S. Montgomery,** resigned.

Obituary

J. S. Bartle, assistant freight traffic manager of the Atchison, Topeka & Santa Fe, died at Chicago, Ill., on December 26.

S. W. Eccles, president of the Copper River & Northwestern and Nevada Northern, and vice-president of the Bingham & Garfield Railways, died on December 30, 1917, at St. Augustine, Fla.

Question

What is needed most by the railroads—additional freight cars, locomotives, terminals, or second track?

RALPH PETERS,
President Long Island.

Locomotives are needed most by the railroads. Locomotives and men, together with improved shop and round house facilities that will enable the railroads to take care of the locomotives that they now own. They have cars enough to block the roads, and there has been no difficulty about the terminals taking care of the cars that are moved under proper directions. Locomotives and men are absolutely necessary.

J. R. KENLY,
President Atlantic Coast Line.

An increase in locomotives and terminal facilities, and also in all classes of labor, both skilled and unskilled, would be most helpful and are factors of prime importance.

E. F. KEARNEY,
President, Wabash.

The railroads need most unification of terminals, improved terminal yards, locomotives, freight cars, and second track, in about the order named.

L. E. JOHNSON,
President Norfolk & Western.

Locomotives and labor.

It is my opinion that the inability of the railroads to move freight is the lack of motive power. The fact that the Government was obliged to absorb the steel products left it impossible for the railroads to add to their motive-power equipment.

H. E. BYRAM,
President Chicago, Milwaukee & St. Paul.

All of the items mentioned are essential for taking care of the growing industrial needs of the country, and are, therefore, all important.

WILLIAM T. NOONAN,
President Buffalo, Rochester & Pittsburgh.

The prime necessity of the railroads at this time is additional locomotives, but, of course, additional freight cars and terminal facilities are also necessary.

The principal causes for the congestion of traffic referred to in Interstate Commerce Commission's recent recommendations were a shortage of locomotives and inadequate terminal facilities, a condition made more difficult by the large number of priority orders covering Government material which require additional transportation service.

GEORGE W. STEVENS,
President Chesapeake & Ohio

First, additional terminal facilities. Second, locomotives and freight cars. Third, additional running tracks.

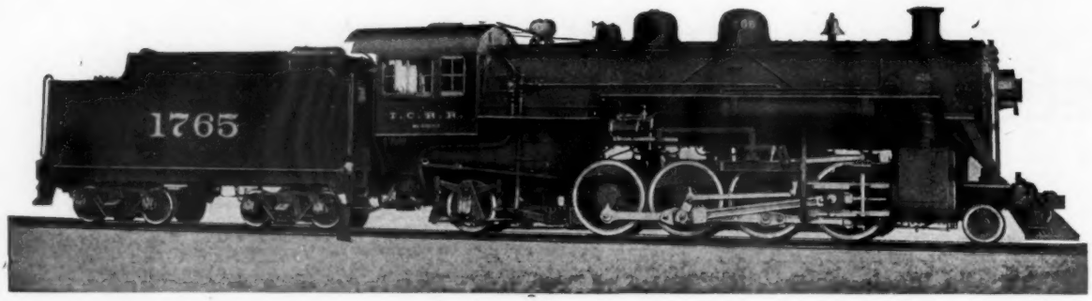
E. P. RIPLEY,
President Atchison, Topeka & Santa Fe.

You ask what is needed most by the railroads. I think the answer is mainly locomotives, but secondly terminals, especially on the seaboard.

From Annual Financial Review, New York Evening Post, Dec. 31, 1917.

Quickly modernizing all old locomotives will give the equivalent of many new locomotives.

G. M. BASFORD CO



Illinois Central Modern Power

"PUT THE PUNCH IN CAR MOVEMENTS"

Dr. Garfield
Fuel Administrator

Meeting this great transportation emergency is trying to men and to locomotives.

It shows the value of locomotives suited to operating conditions.

It brings out as never before the need for reserve strength.

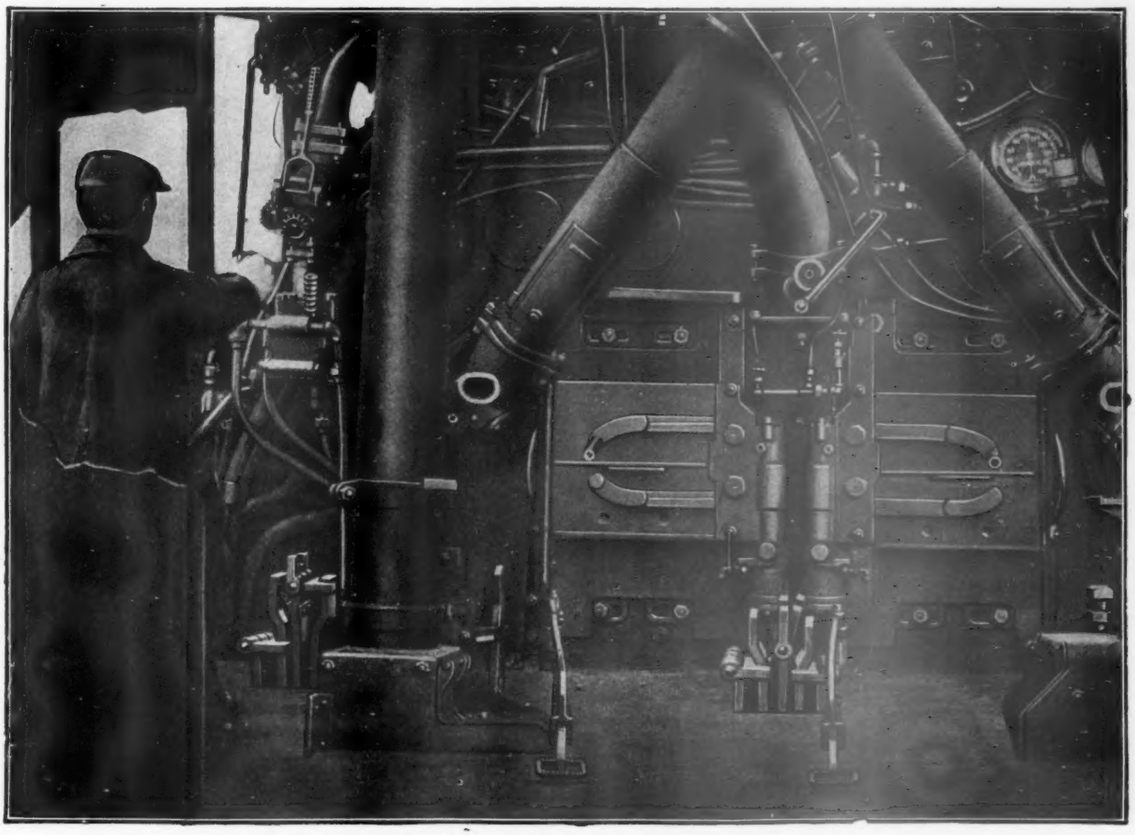
It emphasizes the necessity for locomotives that will measure up to the demands they are called upon to meet.

Such locomotives result only from the utmost care in design.

Lima Locomotive Works, Incorporated

Lima, Ohio

30 Church Street New York



Back Head of Erie Triplex
It takes 30 to 60 minutes to dump a fire by hand.
Franklin Steam Grate Shakers do it in 5.

"PUT THE PUNCH IN CAR MOVEMENTS"

Dr. Garfield, Fuel Administrator

Can you put a punch in car movements with engines held up by cumulative ash pit delays?

Absolutely NO!

It's the slow hand cleaning of clinkered fires these zero days that delays the game.

Get the fires dumped with dispatch.

Do the job with Franklin Steam Grate Shakers.

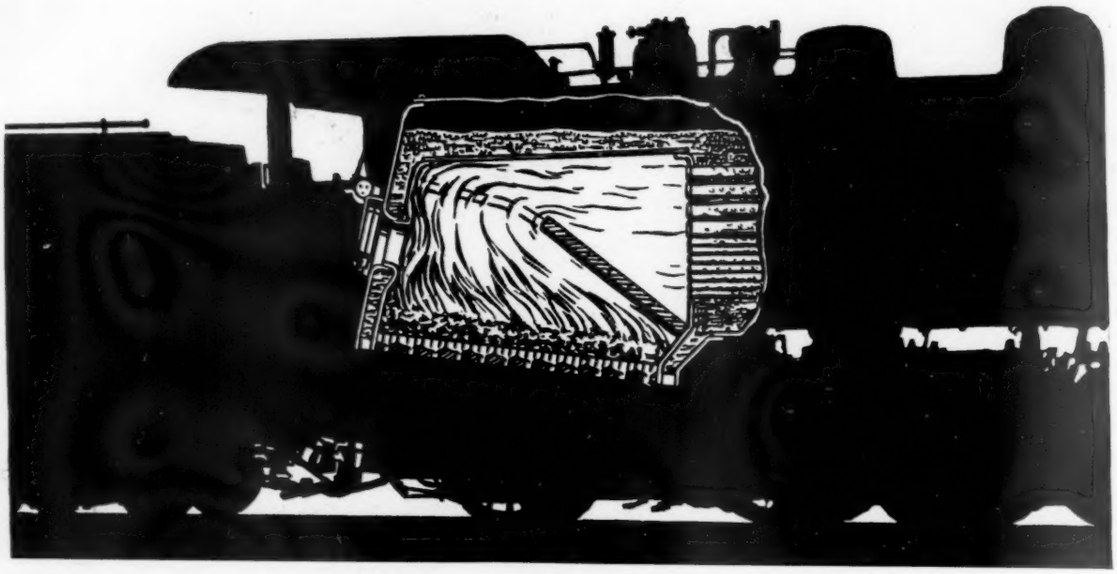
Shoot the engines over the pit and back on the road to move cars.

Franklin Railway Supply Company, Inc.

30 CHURCH STREET NEW YORK

332 So. Michigan Avenue
Chicago

625 Transportation Building
Montreal



Security Sectional Arch
It Increases Ton Mile Power from 10 to 16 per cent.

"PUT THE PUNCH IN CAR MOVEMENTS"

Dr. Garfield
Fuel Administrator

Put a solar plexus punch in car movements by putting arches on those old engines.

There are still 30,000 old engines running today that day after tomorrow could have 10 to 16 per cent. more car hauling capacity.

Think of it.

Zero weather.

Every pound of power needed.

Don't you see what Arches mean in this emergency?

AMERICAN ARCH COMPANY

Specialists in Locomotive Combustion

McCormick Building
Chicago

30 Church Street
New York

"PUT THE PUNCH IN CAR MOVEMENTS"

Dr. Garfield,
Fuel Administrator

Move more cars.

Move them faster.

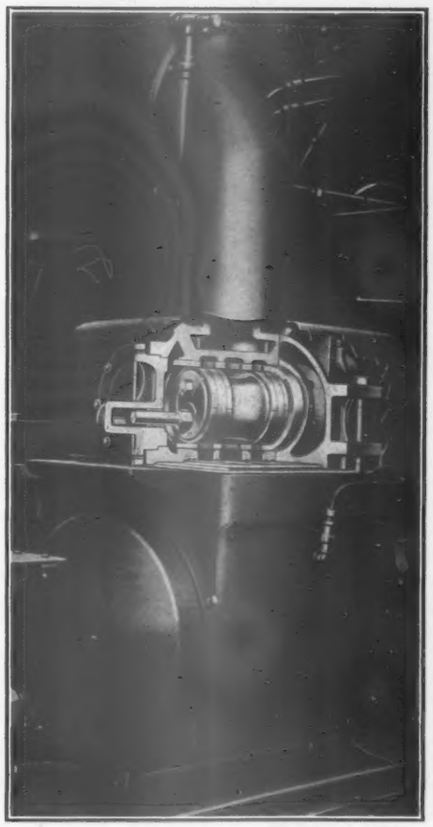
Move them by modernizing old engines.

With Universal Valve Chests old engines can be modernized without waiting for new cylinders and frame ends.

In 1917 one road moderinized 100 slide valve engines using Universal Valve Chests.

59 other roads are putting the punch in car movements with Universal Valve Chests engines.

Look around, you'll see them.



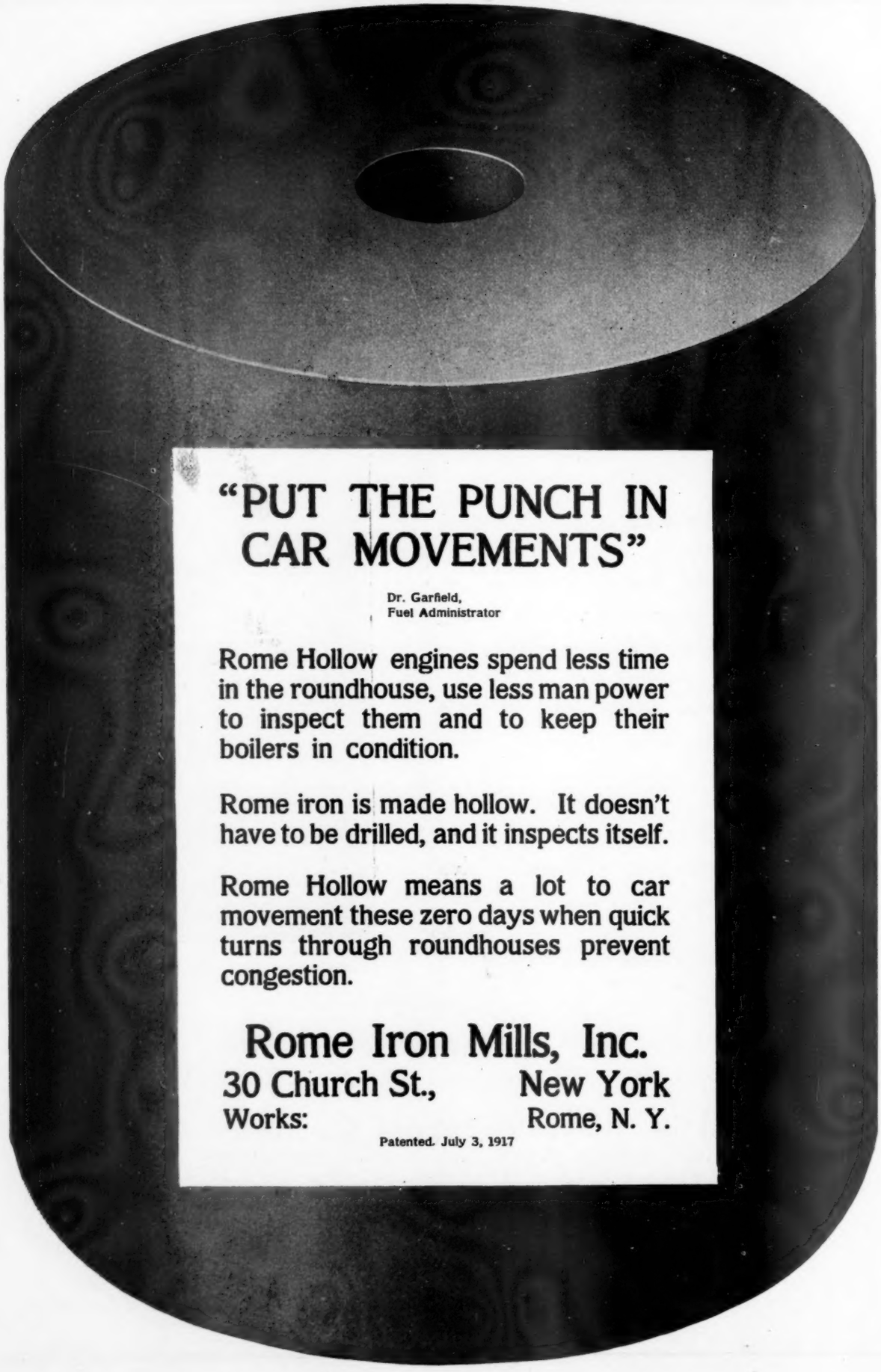
Piston valve where slide valve used to be

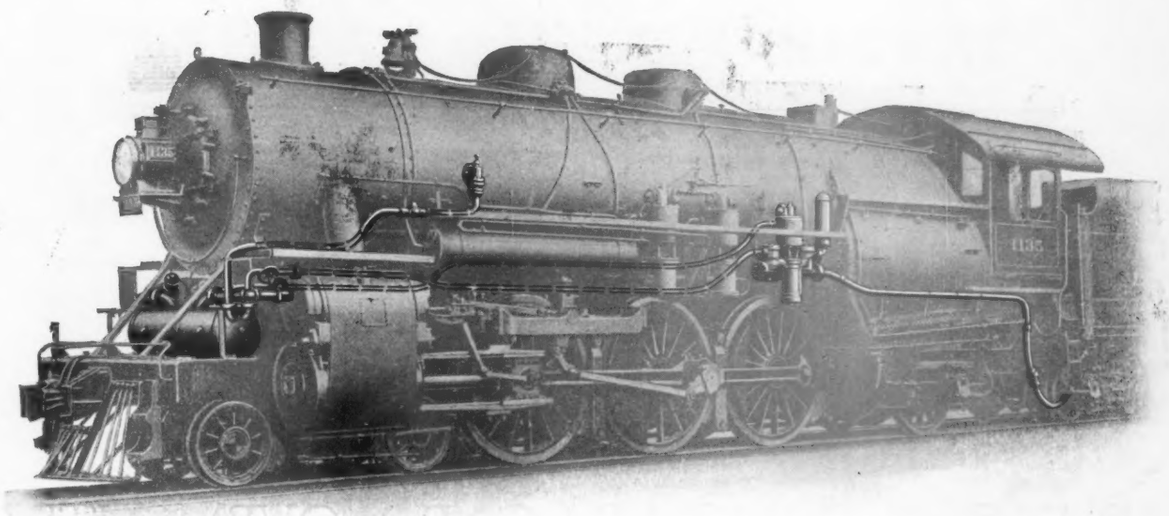
Franklin Railway Supply Company, Inc.

30 CHURCH STREET NEW YORK

332 So. Michigan Avenue
Chicago

625 Transportation Building
Montreal


"PUT THE PUNCH IN CAR MOVEMENTS"
Dr. Garfield,
Fuel Administrator
Rome Hollow engines spend less time in the roundhouse, use less man power to inspect them and to keep their boilers in condition.
Rome iron is made hollow. It doesn't have to be drilled, and it inspects itself.
Rome Hollow means a lot to car movement these zero days when quick turns through roundhouses prevent congestion.
Rome Iron Mills, Inc.
30 Church St., New York
Works: Rome, N. Y.
Patented. July 3, 1917



Heater Pump

"PUT THE PUNCH IN CAR MOVEMENTS"

Dr. Garfield
Fuel Administrator

Thirty per cent. of all the tonnage hauled is coal.

Ten per cent. of the coal burned by locomotives while working can be saved by feed water heating.

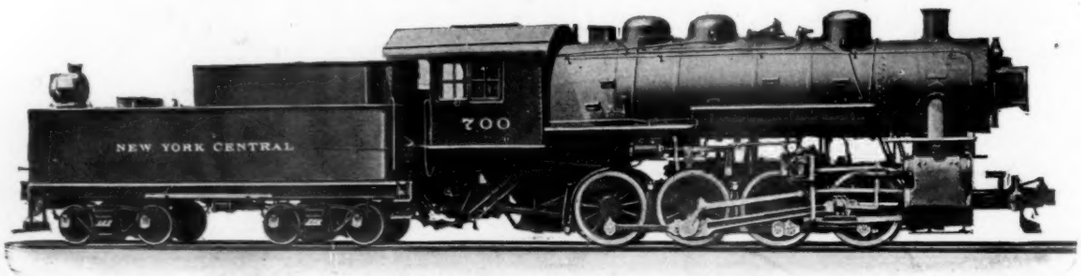
Think what this coal saving would mean—now.

Figure the car hauling capacity that would be released for war supplies.

Locomotive Feed Water Heating today means reduced fuel consumption and increased hauling power.

Locomotive Feed Water Heater Co.

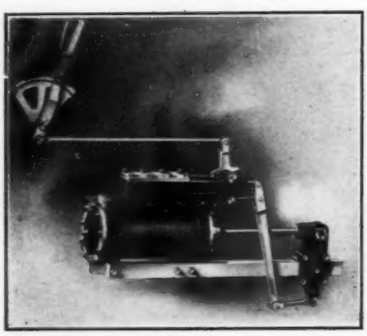
30 Church Street New York



This engine with quick switching Ragonnet is speeding up car movements.

"PUT THE PUNCH IN CAR MOVEMENTS"

Dr. Garfield,
Fuel Administrator



Ragonnet Power Reverse that speeds up yards

In the yards is where cars move slow.

Ragonnet gives the punch that moves them fast.

This is not theory, it's facts.

Ask any yard master who has Ragonnet Power Reverse switchers.

His experience will convince any who are not already convinced.

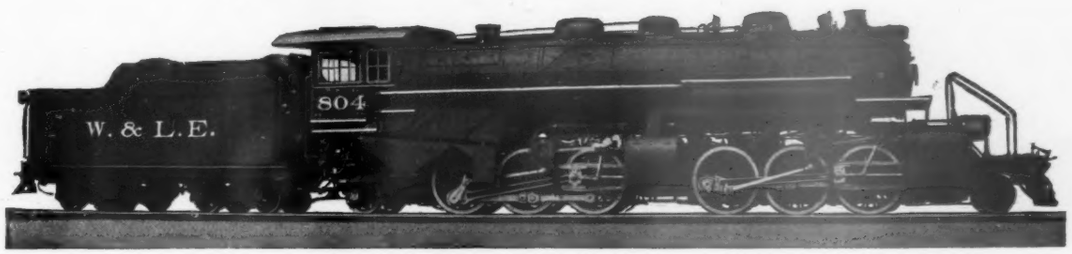
Franklin Railway Supply Company, Inc.

30 CHURCH STREET NEW YORK

332 So. Michigan Avenue
Chicago

625 Transportation Building
Montreal

WHEELING & LAKE ERIE RAILWAY

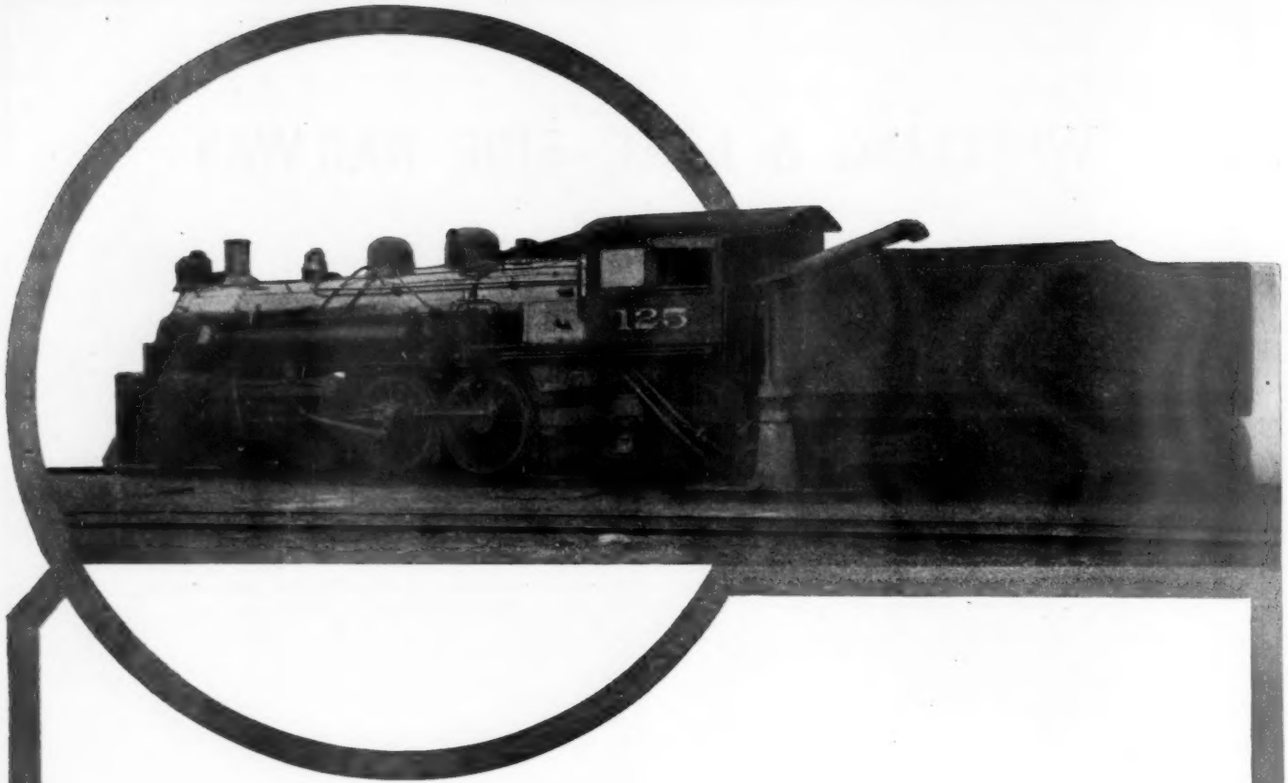


Total Weight of Engine, 435,000 pounds; Weight on Drivers, 357,500 pounds; Diameter of Drivers, 63 inches; Boiler Pressure, 200 pounds; Cylinders, 25½ & 39 x 32 inches; Maximum Tractive Power (Compound) 80,400 pounds.

These engines are operated on the Toledo division between Huron and Brewster, Ohio, a distance of 80 miles. The ruling grade is 0.6 per cent, 5 miles long.

61 cars, 4314 tons, are taken over this division at an average speed of 17 miles per hour.

AMERICAN LOCOMOTIVE COMPANY
30 CHURCH STREET, NEW YORK



BACKBONE

OR the ability to stand severe service, with no breakdown, is the story of Hunt-Spiller Gun Iron Cylinder Bushings.

They were applied to Engine 125 which is equipped with a super-heater and is engaged in heavy passenger service. This engine has made over 500,000 miles without renewal of bushings.

Have you such a record? If not apply

Hunt-Spiller Gun Iron Bushings

Made Only by

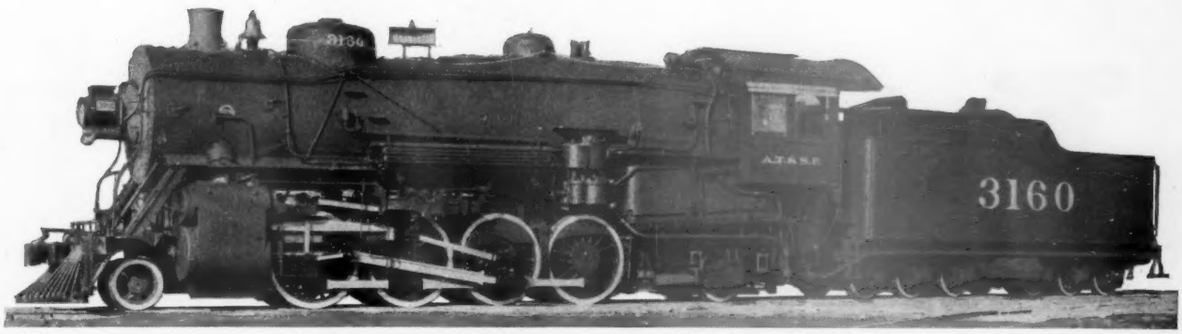
HUNT-SPILLER MFG. CORPORATION

W. B. Leach Pres. & Gen. Mgr. J. G. Platt, Vice-Pres. & Sales Mgr.

Office & Works

383 Dorchester Ave. So. Boston, Mass.

NEW BALDWINS FOR THE SANTA FE



Mikado Type Locomotive, Atchison, Topeka & Santa Fe Ry.
W. B. Storey, Vice-President in Charge of Motive Power Dept.
J. Purcell, Asst. to Vice President. M. H. Haig, Mechanical Engineer.

CYLINDERS—27 x 32 inches.
DRIVING-WHEELS, DIAM.—63 inches.
STEAM PRESSURE—190 lbs.
GRATE AREA—66.8 sq. ft.
WATER HEATING SURFACE—4,614 sq. ft.
SUPERHEATING SURFACE—1,086 sq. ft.
WEIGHT ON DRIVING WHEELS—228,900 lbs.
WEIGHT, TOTAL ENGINE—314,900 lbs.
TRACTIVE FORCE—59,800 lbs.

The Mikado type locomotive illustrated above was designed for service on the Eastern Lines of the Santa Fe System, where grades are moderate and good speeds can be maintained. The new engines develop practically the same starting tractive force as lighter Mikados built for this road in 1916, but they have larger boilers, cylinders and wheels, and can maintain higher speed while handling the same or slightly greater tonnage. This means less time getting over the road—fewer delays and reduced congestion—and most important of all, increased ton-miles per day per locomotive unit.

THE BALDWIN LOCOMOTIVE WORKS
PHILADELPHIA, PA., U. S. A.

Represented by

F. W. Weston, 120 Broadway, New York, N. Y.
Charles Riddell, 627 Railway Exchange, Chicago, Ill.
C. H. Peterson, 1210 Boatmen's Bank Bldg., St. Louis, Mo.
George F. Jones, 407 Travelers Building, Richmond, Va.
A. Wm. Hinger, 512 Northwestern Bank Bldg., Portland, Ore.
Williams, Dimond & Co., 310 Sansome St., San Francisco, Cal.

Cable Address: "BALDWIN, PHILADELPHIA."

Lukens

ONE hundred years of effort by four generations of master steel makers has resulted in the production of Locomotive Firebox and Boiler Steel of such a standard of excellence that to all users throughout America

Lukens Signifies Quality

LUKENS STEEL CO.
Coatesville **Penna.**

SERVICE

Service is the watchword of the times.

The war can be won only by unstinted service.

The outcome depends as much on the machine as on the soldier.

In every field of mechanical design, nothing is or can be neglected that will directly or indirectly give increased service.

Thus, it has been proved anew, and in every field in which steel is used, that

VANADIUM STEEL

means service. In aeroplane, submarine, gun, army truck, light and heavy armor, automobile, locomotive, machine and cutting tool, the greater strength of vanadium steel is utilized to the one end—increased service.

American Vanadium Company

NEW YORK PITTSBURGH LONDON

TEXACO RAILROAD OILS

TEXACO LUBRICATING OILS
for Rolling Stock, Plant or Shop

TEXACO CYLINDER OILS

TEXACO MACHINE and CUTTING OILS

TEXACO BURNING OILS of All Kinds

TEXACO GREASES for All Purposes

TEXACO CRATER COMPOUND
The Remarkable Lubricant
For Gears, Chains and Wire Ropes

TEXACO FUEL OIL

TEXACO BELT DRESSING

TEXACO ASPHALTS

TEXACO WATERPROOFING MATERIALS

A word to any of our Railroad Department Offices will bring a representative, competent to discuss your lubricating and other oil requirements fully

THE TEXAS COMPANY

Railroad Department

NEW YORK OFFICE: Whitehall Bldg.
CHICAGO OFFICE: McCormick Bldg.
HOUSTON OFFICE: The Texas Company Bldg.
ATLANTA OFFICE: Healey Bldg.

A Business Trip With A Railway President

THE TENTH SCENE IN A DRAMA OF MODERN RAILROADING

"I've read about Perolin, you have written me about Perolin and from what I have just seen, this road needs Perolin."
Pres. "Y"

"The way to scale down Maintenance of Equipment costs is to down scale and that means—Perolin."
P. E. Rolin

CHARACTERS

President Y. of U. N. P. & B. Ry.....A Man of Action
Abel Mann .....Vice-Prest. of U. N. P. & B. Ry.
Jack M. Upp.....Gen. Mgr. of U. N. P. & B. Ry.
X. Haust Pipe.....Supt. M. P. of U. N. P. & B. Ry.
Tubel Scale .....Master Mech. of U. N. P. & B. Ry.
M. U. D. Ring.....A Colored Messenger

AND

P. E. ROLIN.....EXPERT ON BOILER METAL TREATMENT

Time: Right Now Place: Office of Pres. Y.

M. U. D. RING— "De next Gent what calls me 'Smoke Box Ring' gets hurt. I done told dat man mah name was M. U. D. Ring. He tells me 'I'm callin' on the President to show him how to prevent you-all from giving trouble.' I wonder what he means to 'sinuate."

PRES. "Y" - "Mr. Rolin, I'm glad to meet you. We have had some correspondence and now I wish to ask you some questions."

P. E. ROLIN— "At your service, Sir."

PRES. "Y"— "Our road is congested. Every locomotive is busy except those under repair. I find more in that condition than I like, in fact that is why I have asked you to call.

"The demand for power is so great that we must exert every effort to keep our engines working a maximum percentage of the time. Yet I find many locomotives under repair, and our Supt. of Motive Power states that on several divisions the water is so bad that mileage between washouts is small. Does Perolin help such conditions?"

P. E. ROLIN— "Here is what it did for one road. Their practice prior to the use of Perolin was, 208 miles, change water and 416 miles between washouts. Now it is *1248 miles between washouts without change of water.* That's not all—leakage was reduced 30%, coal saved, 1¼ to 1½ tons per trip, steaming capacity increased, engine foaming eliminated and repair cost greatly cut."

"Now your problem is to scale down Maintenance of Equipment costs, is it not? Then I tell you the way to scale down such costs is to *down scale,* and that means—Perolin."

PRES. "Y"— "That's enough, we'll try Perolin on one Division. Good day, Mr. Rolin, I've written our Superintendent of Motive Power that you will call on him."

P. E. ROLIN— "Thanks, sir. That is just what the road I spoke of did—tried Perolin on one Division, the result—general instructions to use Perolin on the entire system."

Next week you will know what Perolin did for President "Y's" road. But right now you should know what it will do for Your road. Write us and we will show you on Your locomotives, under Your own operating conditions.

Perolin The Boiler Metal Treatment

We maintain a Service Department of Mechanical Engineers. Better do as Pres. Y. did—make use of it and learn what Perolin will do for you.

Perolin Railway Service Company

General Offices, Railway Exchange Building, St. Louis

Chicago Office
Peoples Gas Bldg.

G. F. Cotter Supply Company
Southwestern Representative
Southern Pacific Building, Houston

Eastern Office
Woolworth Bldg.
New York

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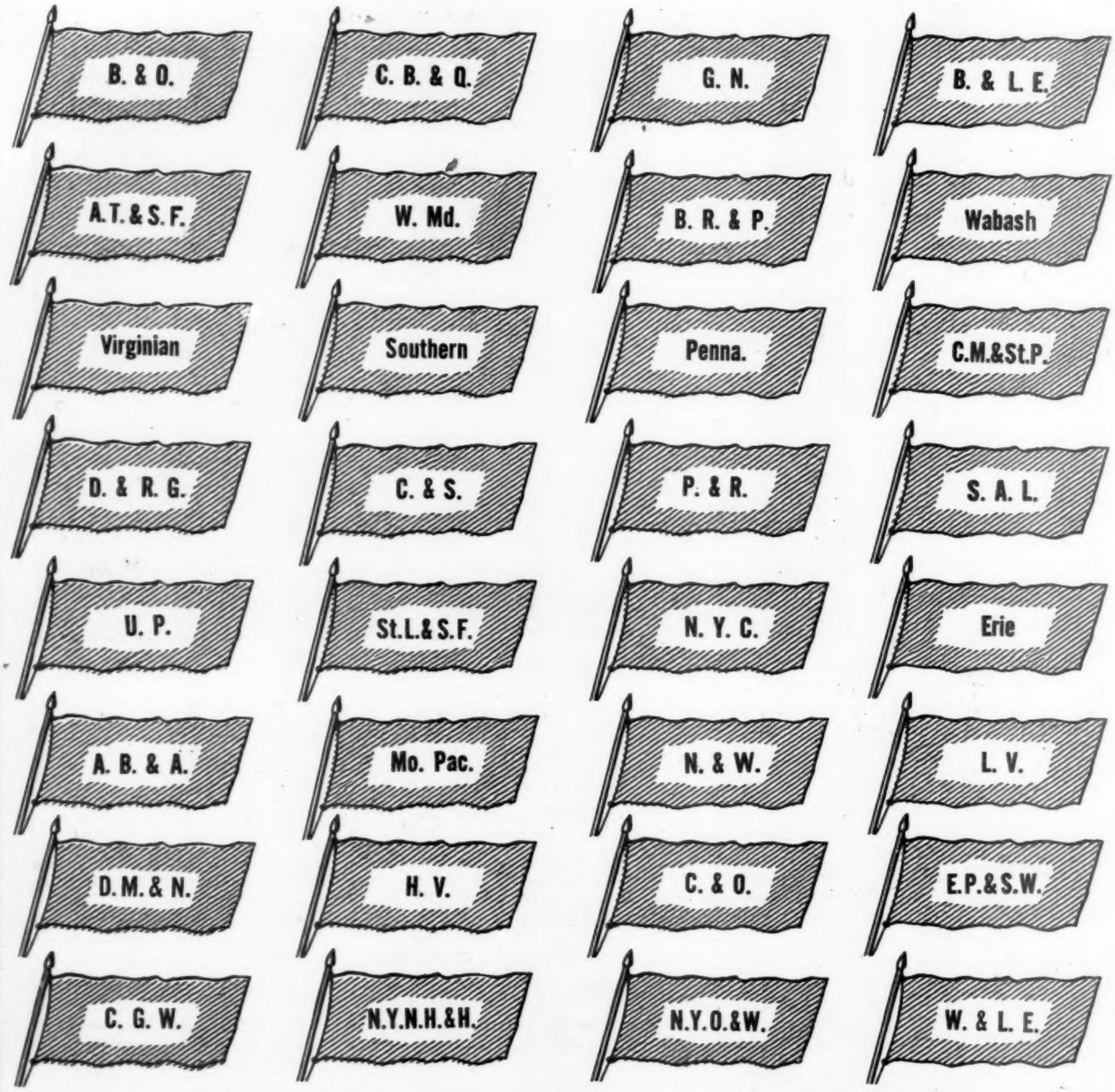
RENDERING SERVICE



The above flags illustrate the "SERVICE" we are rendering these Railroads by making LARGER LOCOMOTIVES POSSIBLE or MORE TONNAGE FROM PRESENT LOCOMOTIVES.

While our Field Force has been somewhat depleted on account of men going into the Army and serving in France, those at home are SERVING 32 RAILROADS

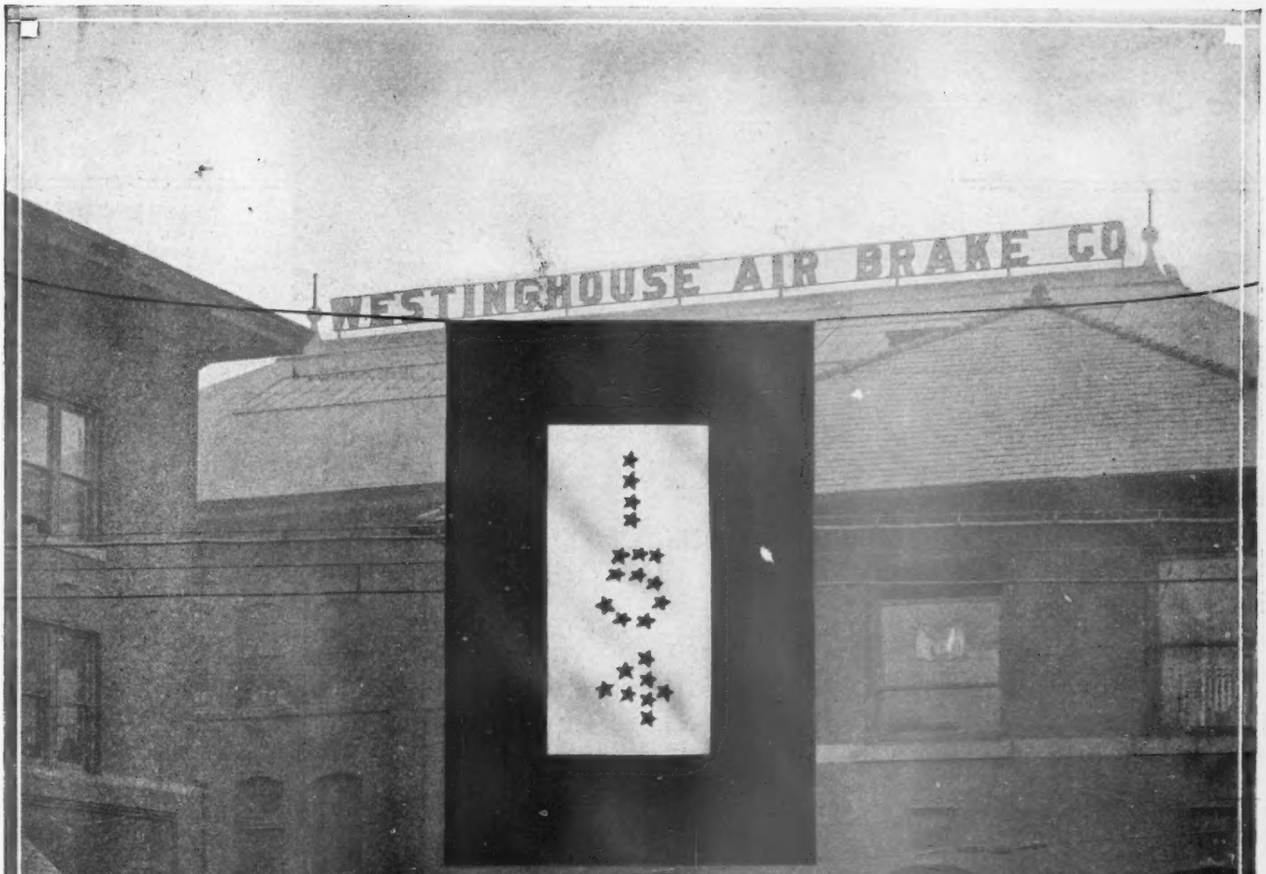
FIRING 1700 LOCOMOTIVES with DUPLEX AND STREET STOKERS

LOCOMOTIVE STOKER CO.

50 Church Street
NEW YORK

Main Office and Works
PITTSBURGH, PA.

Railway Exchange
CHICAGO



Our Service Flag

Indicates that more than one hundred and fifty of our employees have joined the colors and are supporting the United States Government in its fight to make the world safe for civilization and democracy. Also millions of air brakes are serving the cause by controlling the movement of thousands of trains on our American railways, thus providing safety and despatch to the transportation of Government troops and war supplies—the heaviest movement of railway traffic in history.

Westinghouse Air Brake Co.

General Office and Works, Wilmerding, Pa.

Atlanta, Ga.
Boston, Mass.
Chicago, Ill.
Columbus, O.
Denver, Col.
Houston, Tex.
Los Angeles,
Mexico City
New York, N. Y.
Pittsburgh, Pa.
San Francisco,
Seattle, Wash.
St. Louis, Mo.
St. Paul, Minn.

Brake Building our Business for a Lifetime

PREPAREDNESS

IN THE CONDITIONS OF FIREBOX STAYING MEANS ECONOMIC AND RELIABLE SERVICE

Many of our customers have been applying large numbers of Tate Flexible Staybolts to their locomotive fireboxes throughout the past year, in several cases complete installations, and are thus prepared to better cope with heavy business, with less anxiety as to staybolt and firebox failures.

RIGIDITY OF CONSTRUCTION is a fallacy of the past. The laws of expansion demand provisions in the elements of design and in the art of construction, to safeguard the material life of all members that are subject to its inevitable and destructive effects.

THE TATE FLEXIBLE STAYBOLTS, to a large extent, serve to compensate for a too rigid condition by affording suitable means, as connecting members, to hold firebox and outer shell of boiler securely together to allow the firebox to expand with more freedom, and to accommodate the unequal expansion of all heat absorbing plates, thus minimizing the stresses in both sheets and staybolts, in proportion, however, to the amount of flexibility that can be obtained in the arrangement of their application to the firebox.

WE COMMEND THE TATE FLEXIBLE STAYBOLT to all railroads, and other users of the firebox type of boiler where staybolts are necessary, with the assurance that it will be found strong, serviceable, economic, and most effective in reducing staybolt breakage and firebox repairs to a minimum.

IN USE ON OVER 500 RAILROADS

FLANNERY BOLT COMPANY

VANADIUM BUILDING, PITTSBURGH, PA. **B. E. D. STAFFORD, Gen. Mgr.**

J. ROGERS FLANNERY & COMPANY, Selling Agents
VANADIUM BUILDING, PITTSBURGH, PA.

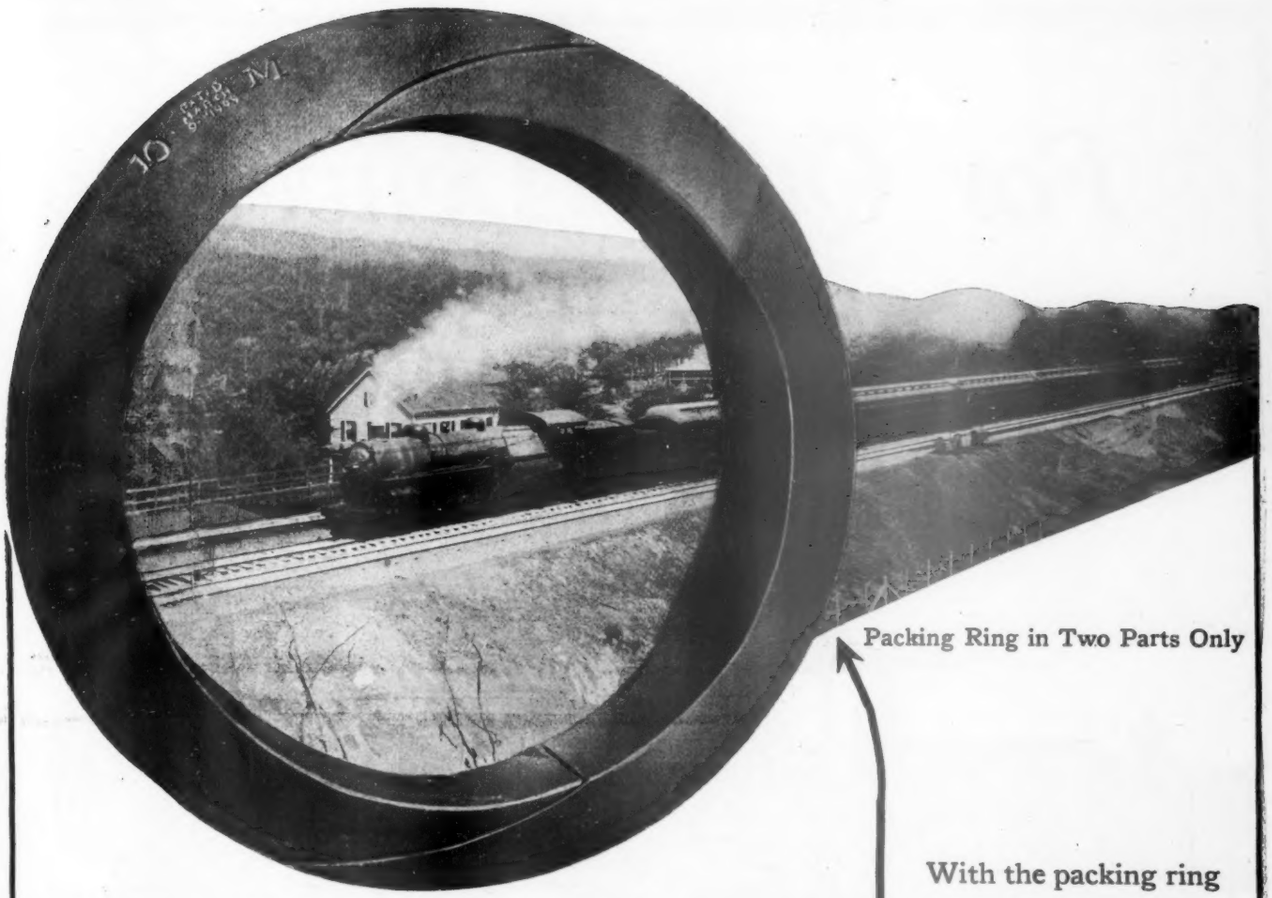
GEO. E. HOWARD
Eastern Representative

W. M. WILSON
Western Representative

COMMONWEALTH SUPPLY CO.
Southeastern Representatives

CHAS. HYLAND
Boiler Expert

6



Packing Ring in Two Parts Only

Train Schedules Depend On This Ring—King Metallic Packing

Right now the very flower of your help is marching away to the support of the colors.

You know there is no surplus labor for the job which must have human attention.

The things that give the maximum in results with the minimum of attention must be used.

King Packing is right in design and right in construction—the Packing Ring is in only two parts—a packing to meet satisfactorily all the demands of service—a packing so simple in design that anyone can successfully apply it; so strong in construction that it resists equally well the speed of fast service and the strain of slower heavy service.

King Packing is beyond the experimental stage; King Packing has established and maintained proven records in packing service.

PISTON RODS—VALVE STEMS—AIR PUMP PISTON RODS.

The United States Metallic Packing Co.

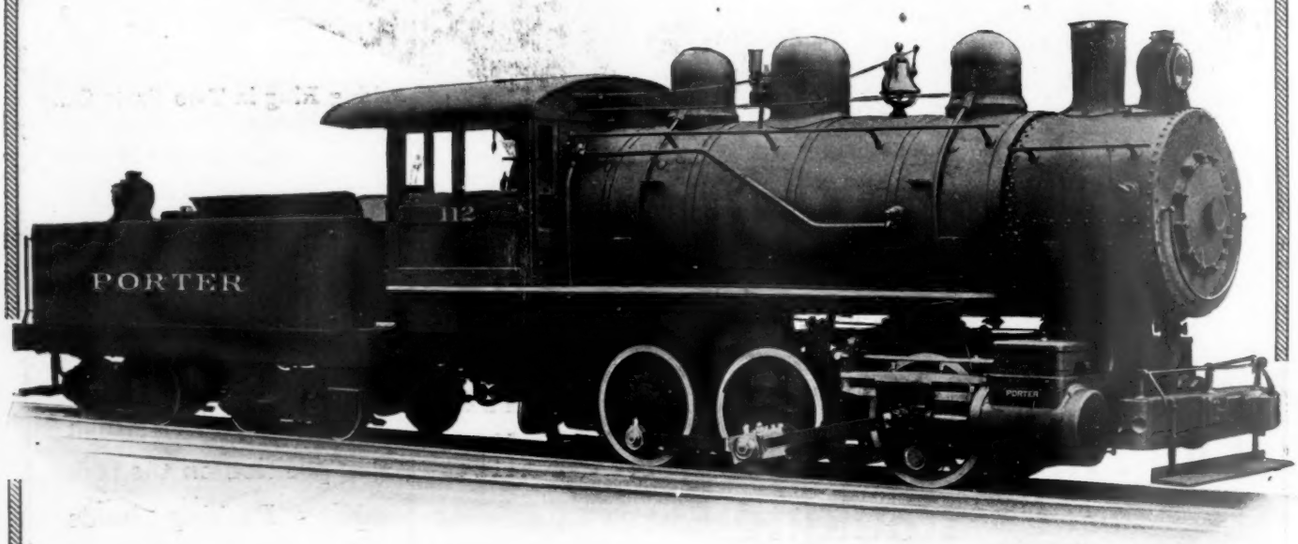
429 N. 13th Street, Philadelphia, Pa.

With the packing ring in only two parts which interlock when in position on the rod, King Packing holds the steam absolutely tight, wears long, is simple to apply and economical in the time for application.

We have valuable data to cover all conditions under which packing is used or can be used. Let us explain in detail why King Metallic Packing should be your selection.

For Quick Delivery

Six-Wheel Switchers



We have several sizes of these locomotives under way and can give unusual deliveries

Write for catalog of light and heavy

LOCOMOTIVES

H. K. PORTER CO.

1214 UNION BUILDING **PITTSBURGH, PA.**

Right Now

Right now you need every pound of pull you can put on that old draw bar.

While it is true that a valve gear cannot increase pulling capacity beyond a certain point, yet it does regulate the amount of steam necessary to produce a given tractive effort.

The Baker Valve Gear

—the modern outside gear—is guaranteed to give a 5% increase in pulling capacity with a 5% decrease in fuel consumption, and this with lower maintenance costs.

The Time to Apply the Baker Valve Gear is NOW

Write for a copy of the Guarantee

Are you using the "Sentinel" Low Water Alarm? If not, let us talk it over.

BAKER VALVE GEAR
Over 4,500 in Service

THE PILLIOD COMPANY

30 Church Street, New York, N. Y.

Western Representative—Mudge & Co., Railway Exchange, Chicago, Ill.

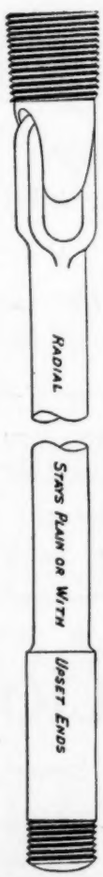
BREAK-LESS STAY BOLTS

No Caps
No Sleeves
Just Flexibility
and Service

THESE staybolts give perfect flexibility without the complications of sleeves and caps.

Simplicity and maximum strength combined to the utmost make the Break-less the most economical both to install and to maintain.

The Break-less is the only bolt in existence that will completely stay a boiler from the shortest staybolt to the longest brace.



Make Us Prove These Assertions To You As We Have To Many Others

THE BREAKLESS STAY BOLT COMPANY

PITTSBURGH, PA.

Whistles

Single Bell

The chime whistle shown here has a full rich sound of great volume. The construction is simple but strong, coupled with pleasing appearance and finish. Material and workmanship are the best obtainable.

Chime

Our single bell whistles, which are designed and constructed with much care and attention, we can highly recommend for use on locomotives.

Injectors, Lubricators and Locomotive Appliances

Descriptive Catalogue on Request

NATHAN MANUFACTURING CO.
FLUSHING, L.I. NEW YORK

Western Office: 1612 Old Colony Building, Chicago
St. Louis Office: Frisco Building
SOLE AGENCY OF THE COALE MUFFLER SAFETY VALVES 11

Send For Our New Booklet On The Subject Of Water As Used For Steam Making

The subject is one that cannot be dealt with adequately in the limited space of an advertisement.

This booklet explains **the causes of Corrosion, Incrustation, Foaming and other troubles, and offers a scientific solution of these difficulties.** We believe it will make you realize more fully than you do already, how destructive of boilers and boiler efficiency untreated feed waters may be.

We believe a study of the booklet will also convince you that we are capable of dealing with the proposition in the most effective manner.

In case you are experiencing trouble from the use of bad water supplies in your locomotives, send gallon samples of the waters for analysis, and let us advise regarding treatment.

Let us have your address and the booklet will be forwarded at once.

DEARBORN CHEMICAL COMPANY

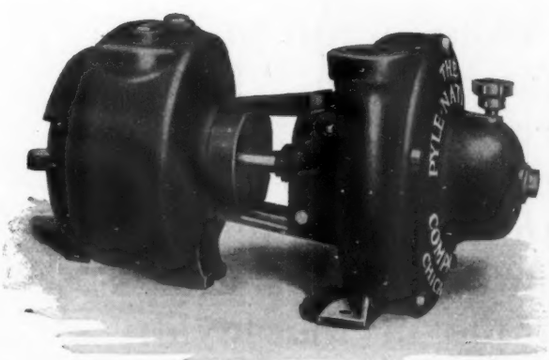
General Offices, 332 South Michigan Avenue, Chicago
Laboratory & Factory, 1029-1037 West 35th Street, Chicago

Has It Ever Happened To You

New devices appear from time to time, attractive in their novelty—more so in their price.

But after they are yours for a while, the high cost of maintenance looms up. They lacked development. Your bargains become relics.

PYLE-NATIONALS STAY



Type E-2 Turbo-Generator—500 Watts

Special Lamp Case, 14 and 18 Inches

The Pyle-National Company

1334-58 North Kostner Ave. Chicago, Ill., U. S. A.

W. L. Jefferies, Jr.
Mutual Bldg.,
Richmond, Va.

Robert C. Shaal
39 Church St.,
New York

N. S. Kenney
1014 Munsey Bldg.,
Baltimore, Md.

The Holden Company, Ltd.
354 St. James Street,
Montreal, Quebec, Canada

TESTIFYING before the subcommittee investigating the war efficiency of the Navy December 19, Rear Admiral McGowan, chief of the bureau of supplies and accounts, spoke in high commendation of the excellent transportation facilities being furnished by the railroads. He said in part:

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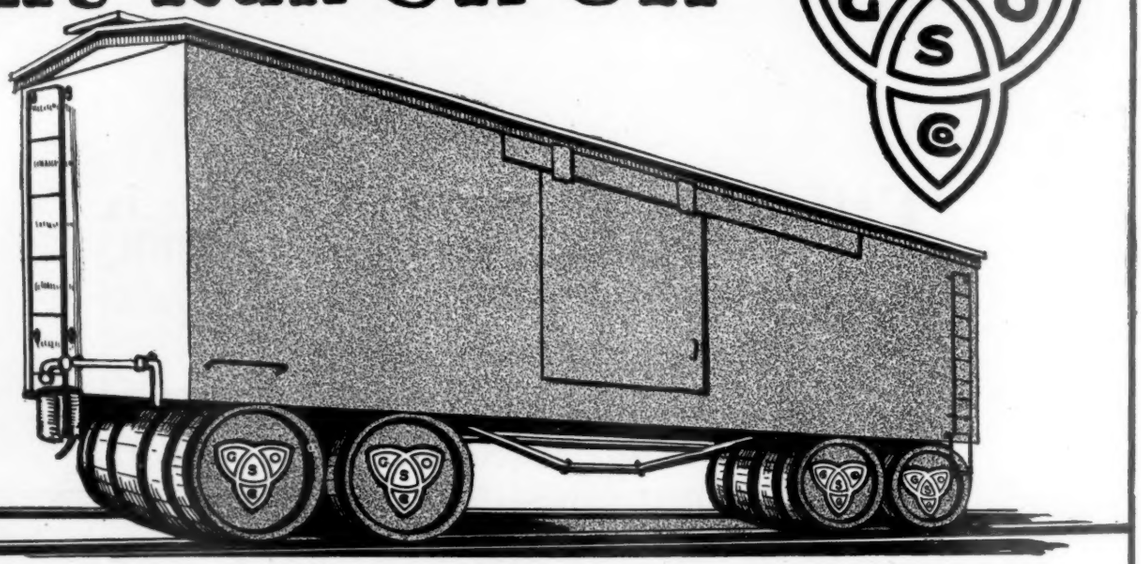

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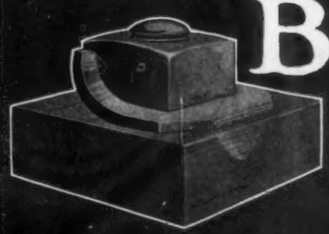

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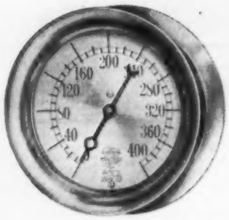

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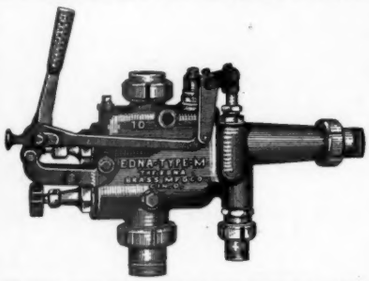

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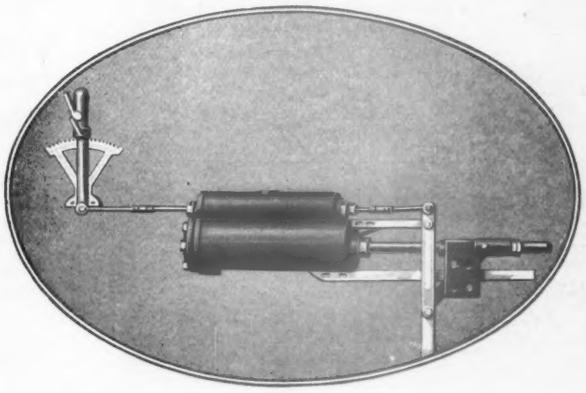

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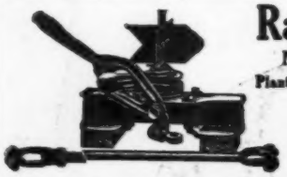

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"NATIONAL" Pipe Withstands Great Force

Fig. 1. 500 ft. of "NATIONAL" Rotary Pipe blown out of a well by the pressure of gas. The fact that there were no breaks in a single joint of the 26 lengths, show that the "NATIONAL" Pipe was "flexible as a giant whiplash." This happened in the Texas field.

Fig. 2. 170 quarts of nitroglycerine failed to crack this piece of "NATIONAL" Casing. The terrific force of the explosion reduced the length from about 18 ft. to less than 6 ft.; although crushed, twisted and distorted, there was no fracture. This happened in the Ohio field.

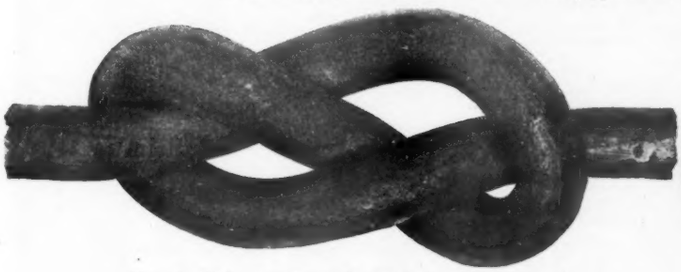

Fig. 3. This bow-knot is made from a piece of "NATIONAL" Pipe, without fracturing the material.

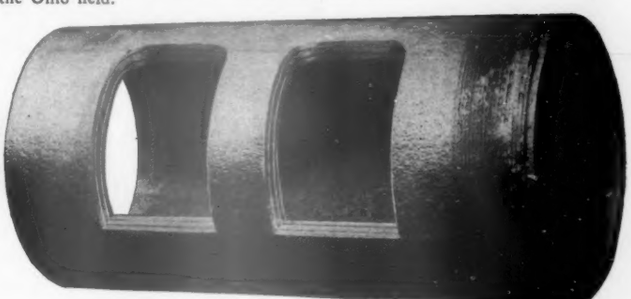

Fig. 4. 1440 ft. of 8¼-in. "NATIONAL" Casing dropped 200 ft. in a well, on solid stone; three sections of the casing were telescoped without a fracture! This happened in the Ohio field.

Fig. 6. This sign made of "NATIONAL" Pipe was used at National Tube Company's exhibit at the International Refrigeration Exposition, Chicago, September, 1913. This was connected up with a refrigerating machine and the pipe is covered with a thick frost, proving there were no leaks.

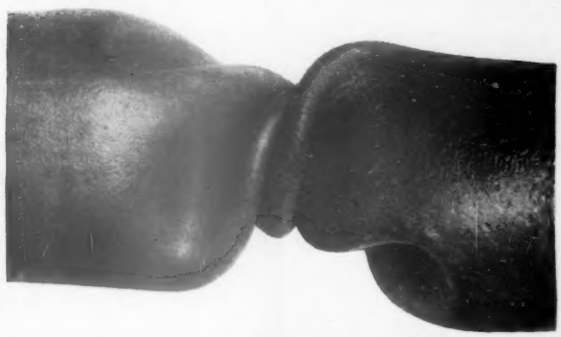

Fig. 7. This piece of 8-in. "NATIONAL" Line Pipe was subjected to a twisting force of 713,000-in. pounds, making it resemble twisted rubber. There was no fracture in the 5/16-in. wall.

Fig. 5. This piece of 10-in. "NATIONAL" Casing dropped 236 ft. through a 12½-in. hole without fracturing the material. The thread protector was driven up over the threads by the force of the impact, yet THE MATERIAL SHOWS NO SIGN OF FRACTURE. This happened in the Oklahoma field.

These unusual pieces of pipe tend to show the inherent reserve strength of "NATIONAL" tubular material.

¶ A few years ago it would have been impossible to secure pipe with physical properties which would withstand such force without fracturing the material, therefore these examples reflect the advance and improvement in metallurgical methods and practice in the manufacture of steel for pipe.

¶To readily identify "NATIONAL" material and as protection to manufacturer and consumer alike, the practice of National Tube Company is to roll in raised letters of good size on each few feet of every length of welded pipe the name "NATIONAL" (except on the smaller butt-weld sizes, on which this is not mechanically feasible on these smaller butt-weld sizes the name "NATIONAL" appears on the metal tag attached to each bundle of pipe).
¶When writing specifications or ordering tubular goods, always specify "NATIONAL" pipe, and identify as, indicated.
¶In addition, all sizes of "NATIONAL," welded pipe 8in. and under are subjected to a roll-knobbling process known as Spellerizing to lessen the tendency to corrosion, especially in the form of pitting. This Spellerizing process is peculiar to "NATIONAL" pipe, to which process National Tube Company has exclusive rights.
¶"NATIONAL" pipe was awarded the GRAND PRIZE (highest possible award) at Panama Pacific International Exposition, 1915.
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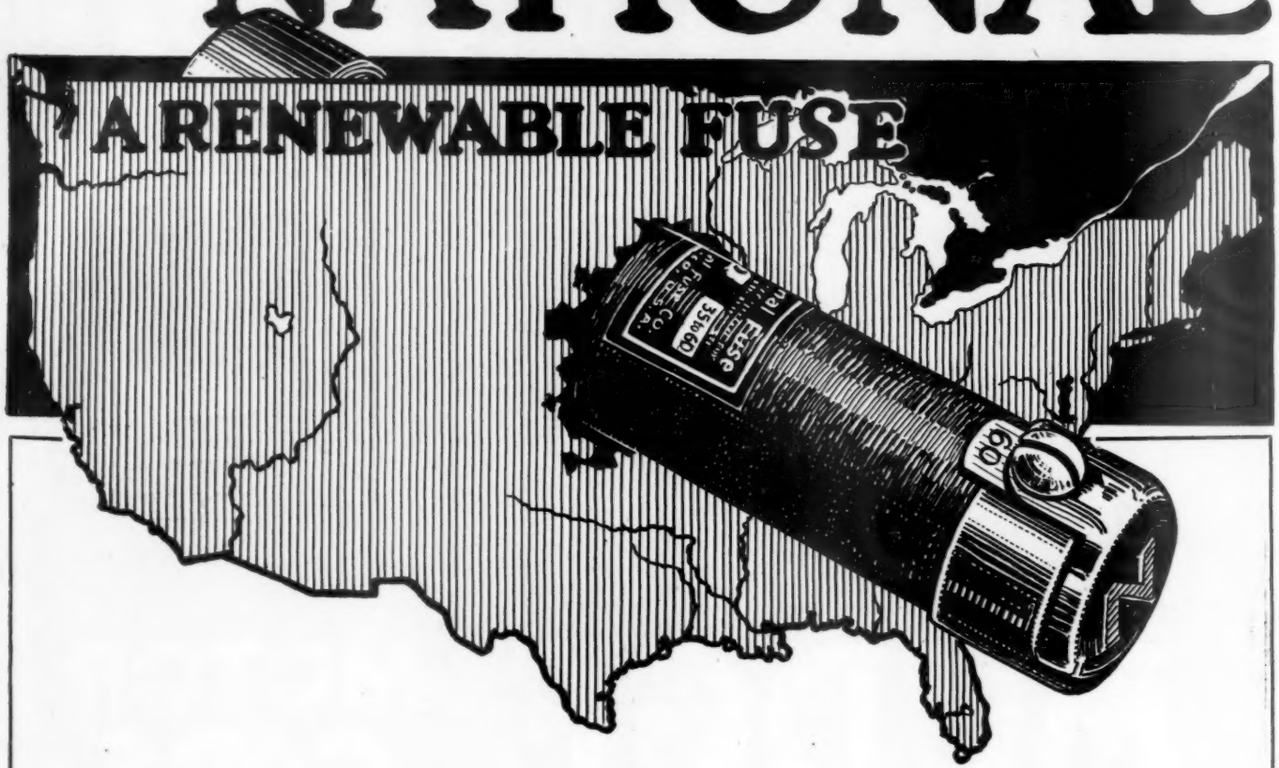

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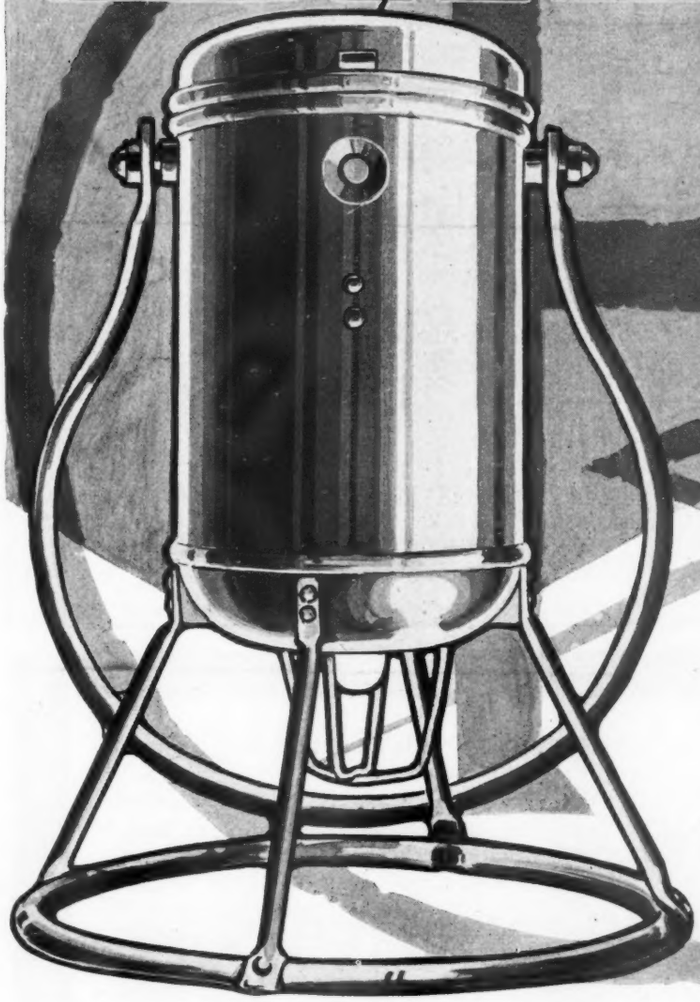

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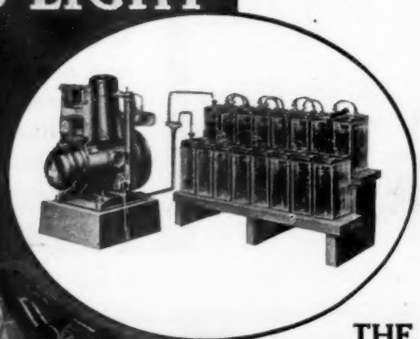

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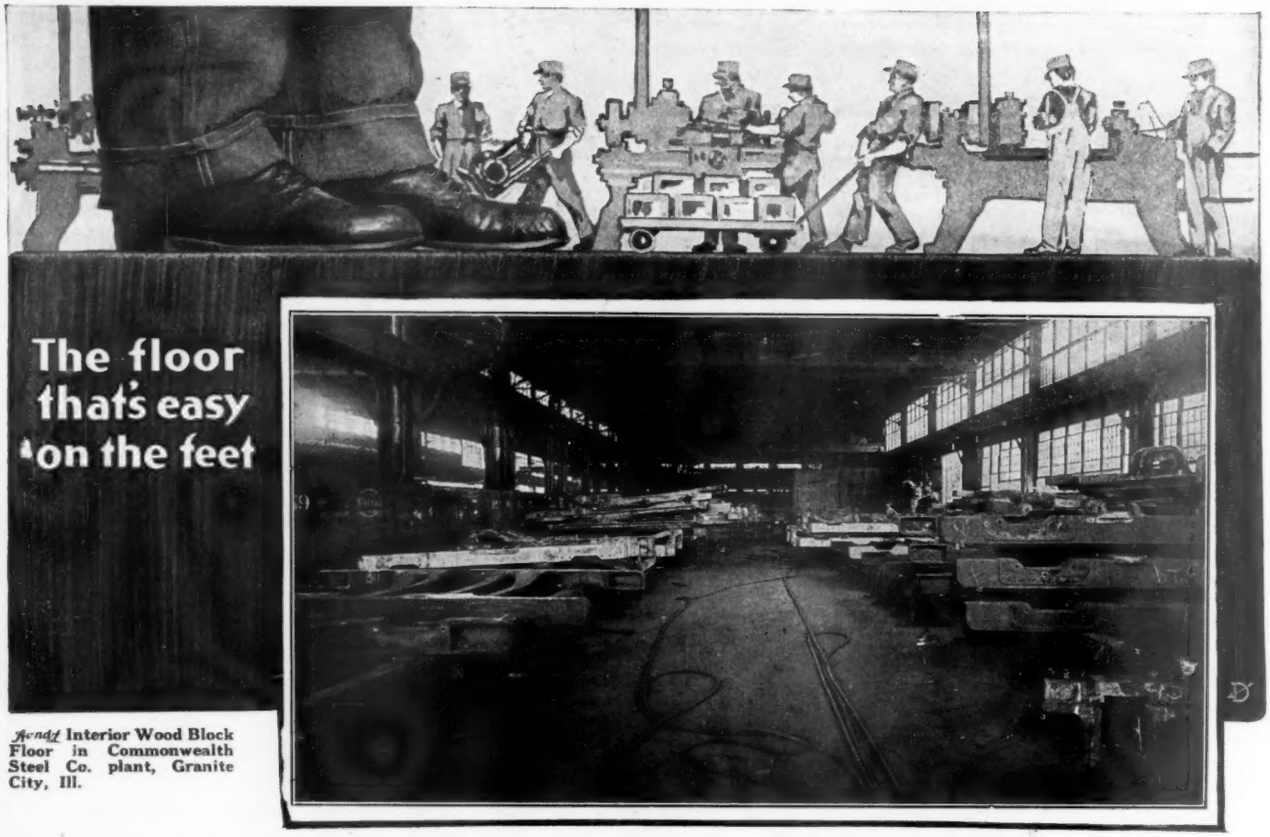

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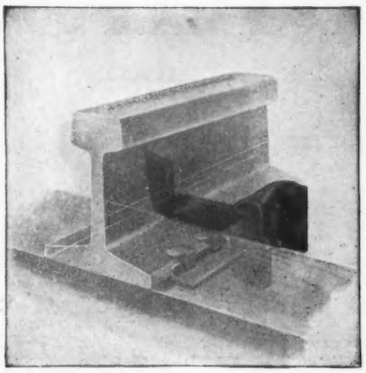

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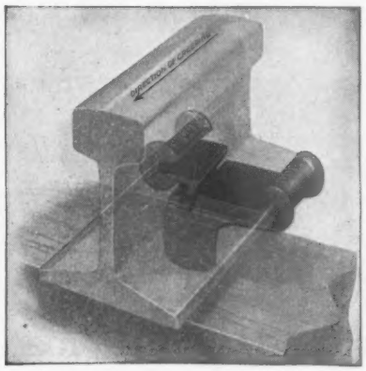

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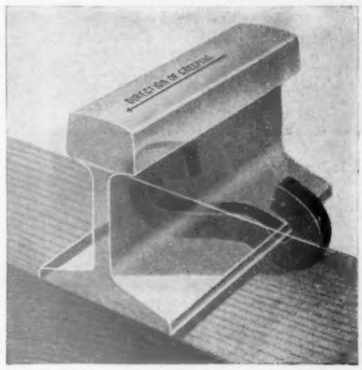

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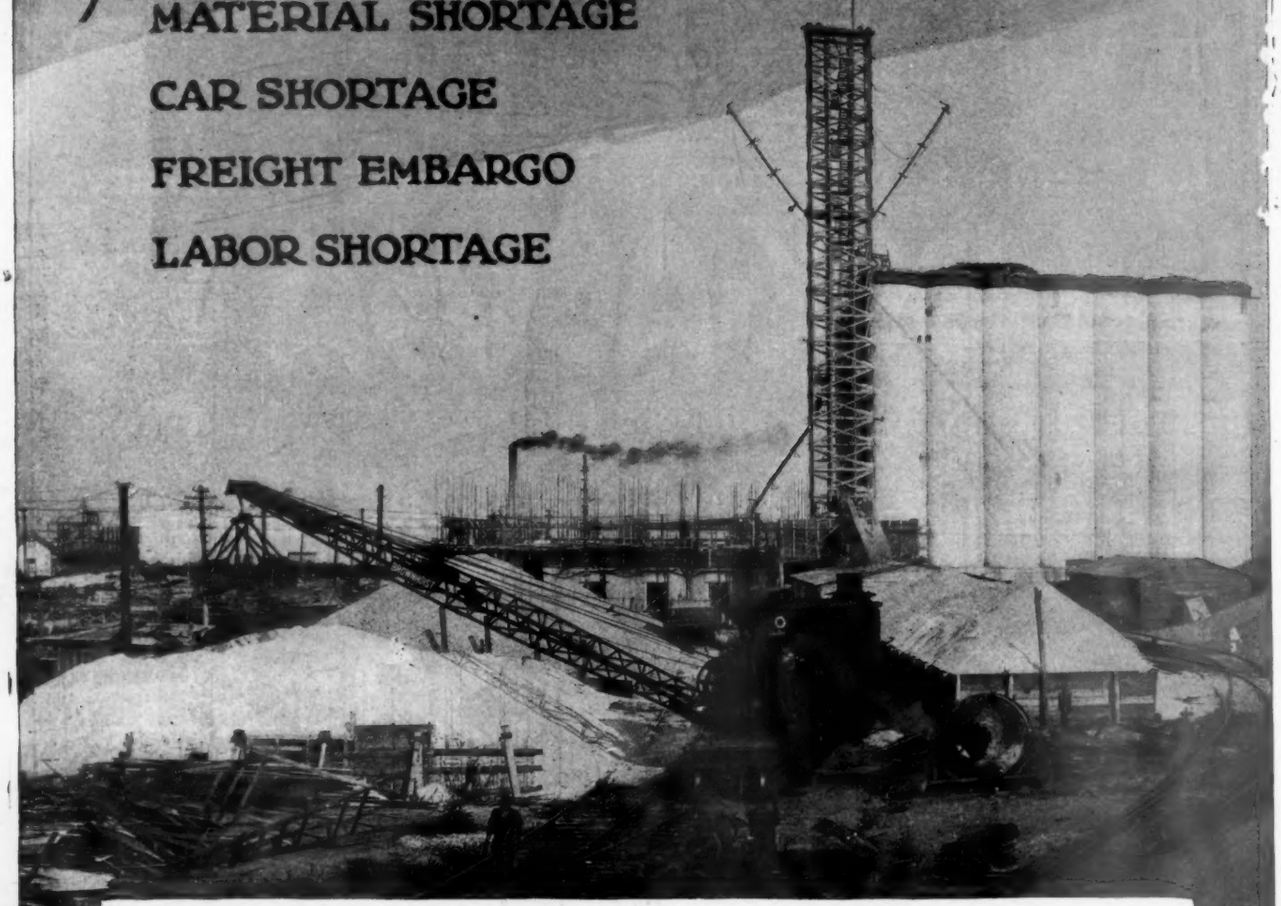

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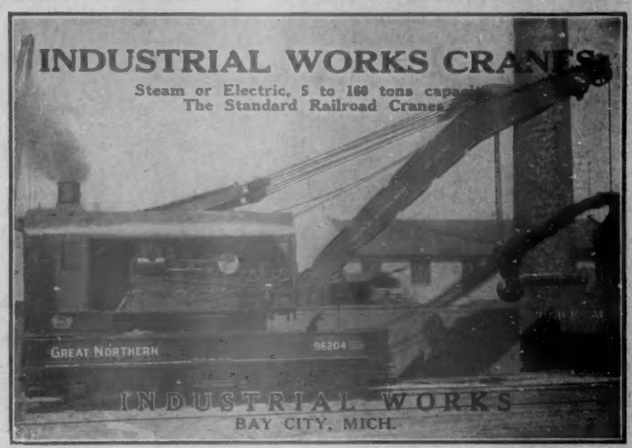

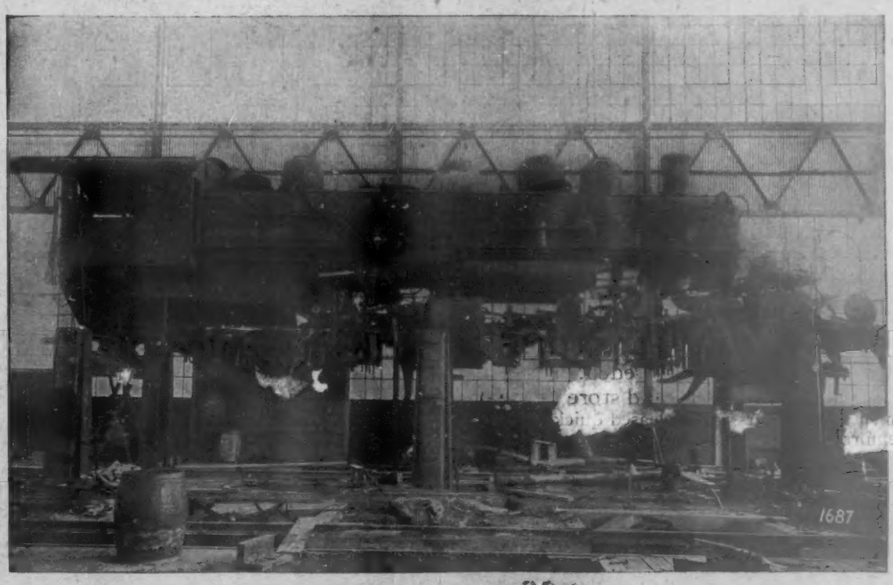

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WHITING
FOUNDRY EQUIPMENT CO.
HARVEY-ILL. U.S.A.
CHICAGO SUBURB

Traffic capacity increased —over 15%

By the use of automatic block signals on seven hundred miles of *single track,* a western railroad increased its traffic capacity over 15%.

By reducing traffic delays, automatic block signals increase traffic capacity without *any* increase in cars, locomotives and track.

Block signals and interlocking not only *protect* the investment in cars and locomotives, but what is more important, protect the valuable shipments that are in such great need today; further they increase the utility of train equipment through efficient *direction* of train movement, and do it as nothing else can.

UNION SWITCH & SIGNAL COMPANY
Swissvale, Pennsylvania

GENERAL RAILWAY SIGNAL COMPANY
Rochester, New York

FEDERAL SIGNAL COMPANY
Albany, New York

HALL SWITCH & SIGNAL COMPANY
Garwood, New Jersey

"Signals keep trains moving"

HMS